

SECTOR 5

COASTS OF SPAIN AND PORTUGAL—CABO FINISTERRE TO CABO DE SAO VICENTE

Plan.—This sector describes the W coast of Spain and Portugal from Cabo Finisterre to Cabo de Sao Vicente. The descriptive sequence is from N to S.

General Remarks

5.1 The coast of Spain and Portugal lying between Cabo Finisterre and Cabo de Sao Vicente, about 350 miles S, is indented by numerous bays, rivers, and inlets which are backed, in places, by high and rugged terrain a short distance inland. Some of the mountains rise to heights of over 600m and are visible for a considerable distance seaward on clear days; however, individual peaks are generally difficult to distinguish.

The principal commercial ports described in this sector are Vigo, Leixoes, Aveiro, Lisboa, Setubal, and Sines. The other small ports, which lie within the inlets and rivers, are frequented only by small craft and fishing vessels.

Well-sheltered anchorage can be obtained by ocean-going vessels in some of the river mouths and inlets, but most are open to the W and SW and are subject to a heavy swell when the wind blows from these directions.

Winds—Weather.—Prevailing winds off the coast of Portugal are from N or NW. The wind is normally stronger in the late afternoon than in the morning, especially from March to August. In winter, the winds are more from the SW and are stronger than in summer.

Along the W coast of Portugal, fog occurs more often in the N than in the S, while along the S coast of Portugal, fog occurs more often in the W than in the E. In winter, fog is more frequent at night, while in the summer, fog is more frequent during dawn and in the early morning. In either season, the fog tends to dissipate by early afternoon.

Tides—Currents.—Currents tend to be S, at a rate of less than 0.6 knot. However, with strong S or SW winds, currents can become N, reaching a velocity of 0.8 knot, and can last for several days.

Caution.—Many of the navigation lights along this coast are placed so high that they are frequently obscured by fog and mist.

Cabo Finisterre to Cabo Corrubedo

5.2 Cabo Finisterre (42°53'N., 9°16'W.) is the outer extremity of a long, narrow peninsula which rises abruptly to several rugged peaks. Pedras Santas, 229m high, stands 1 mile N of the cape and is the highest.

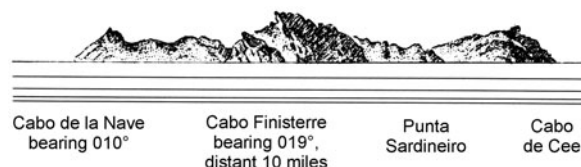
These peaks slope gradually N to a low isthmus which, from a distance seaward, gives the cape the appearance of an island. Monte Pindo, 630m high, stands 7 miles E of the cape and assists in identifying it in clear weather. A large prominent rock is situated on the summit.

A main light is shown from a tower, with a dwelling, 17m high, standing on the cape. A racon and a radiobeacon are

situated at the light. A disused signal station stands close N of the light.

Centola de Finisterre, 23m high, lies 0.5 mile offshore, about 1 mile NW of Cabo Finisterre. This islet is steep and has the appearance of a cone when viewed from a distance. La Carraca, a shoal, lies 1 mile NW of Centola de Finisterre. It has a least depth of 1.8m and breaks. Peton Manoto, a pinnacle rock with a depth of 10m, lies 0.5 mile W of the same islet.

Socabo, a breaking shoal with a least depth of 7.3m, lies about 0.5 mile SW of Cabo Finisterre. Several other breaking shoals, with shallow depths, lie within 0.3 mile S through SE of the cape and may best be seen on the chart.



Cabo Finisterre from SSW

Caution.—A mandatory Vessel Traffic Service is in operation off Cabo Finisterre. The following categories of vessels are required to participate in the reporting system:

1. All vessels 50m long and over.
2. All vessels, regardless of length, carrying hazardous and/or potentially polluting cargo.
3. Vessels engaged in towing or pushing another vessel when the combined length of the vessel and tow or pushed vessel is over 50m.
4. Any category of vessel less than 50m long and engaged in fishing in the Traffic Lane or the Separation Zone.
5. Any category of vessel less than 50m long which is using the appropriate Traffic Lane or Separation zone in order to avoid immediate danger.

The reporting system covers the area between the coast and the following lines:

1. A bearing of 130° to Cabo Villano Light.
2. A bearing of 075° to Cabo Finisterre Light.
3. The meridian of longitude 10°10'W.

This area includes the Traffic Separation Scheme off Finisterre and the designated Inshore Traffic Zones.

The report, called a FINREP, from the vessel to the VTS should contain only information which is essential to achieve the objectives of the system.

Designator	Information required
A	Vessel's name and call sign. IMO Identification Number on request.
C	Position (latitude and longitude), or
D	Range and bearing from a landmark.

Designator	Information required
E	Course.
F	Speed.
G	Last port of call.
I	Next port of call.
P	Hazardous cargo, IMO class, or UN number and quantity.
Q or R	Breakdown; damage or deficiencies affecting the structure, cargo, or equipment of the vessel; or any other circumstances affecting normal navigation, in accordance with the provisions of the SOLAS and MARPOL Conventions.

Finisterre VTS broadcasts regular warnings to mariners and traffic, navigational, and weather conditions, in Spanish and English.

Finisterre Traffic can also provide a particular vessel with information regarding the vessel's position, course, and speed or the identification of traffic in the vicinity. The vessel should request this information.

5.3 Seno de Corcubion (42°53'N., 9°13'W.), a deep and much-indented bay, is entered between Cabo Finisterre and Punta Remedios, 7.2 miles SE. The W side of the bay is free from dangers; the E side is encumbered by numerous islets, rocks, and shoals.

The E side of Cabo Finisterre extends N for 1.5 miles to Castillo de San Carlos. The village of Finisterre stands close N of this ruined castle and is fronted by a small harbor protected by a breakwater. It has depths of 1.5 to 6.6m and is used by small craft. During NE winds, anchorage can be obtained, in depths of 20 to 25m, sand, SE of the castle and 0.4 mile offshore. Closer inshore the holding ground is poor.

Lagosteira Bay and Sardineiro Bay, lying E of the N end of the peninsula of Cabo Finisterre, are both restricted fishing areas; entry is prohibited to all except local fishing craft.

The **Ria de Corcubion** (42°55'N., 9°11'W.) is entered between Cabo Cee and Punta Galera, 1 mile E. It extends 2.3 miles N to the head and provides sheltered anchorage for all classes of vessels. Depths range from 29m in the entrance to 9m about 1.8 miles within the inlet. Farther N, the depths shoal rapidly. The W shore of the inlet is fairly steep-to, whereas, the

E shore is bordered by foul ground which extends up to 0.2 mile offshore. Ruined forts stand on both sides of the inlet, about 1 mile N of each entrance point. A small cove, with a fish factory and pier, lies on the W side of the inlet, 0.3 mile N of Cabo Cee. A coal depot, with a small basin, is situated 1.5 miles N of the same point. Coal lighters lie at moorings off this basin.

Corcubion, a small town, lies on the W shore of the inlet near the head and is fronted by a drying quay and a pier. Another pier, 110m long, is situated at Punta Fornelos, 0.2 mile ENE. At Playa de Brens, a beach lying close SE of Punta Fornelos, a jetty, 275m long, extends SE from a factory. Tides here rise 3.4m at springs and 2.6m at neaps. It is reported that a vessel of 17,900 dwt, 164m in length, and 9.8m draft has been accommodated here at HW.

Anchorage can be obtained, in a depth of 13m, about 0.5 mile SE of the pier at Corcubion. Large vessels can anchor, in a depth of 20m, in midstream between the two forts.

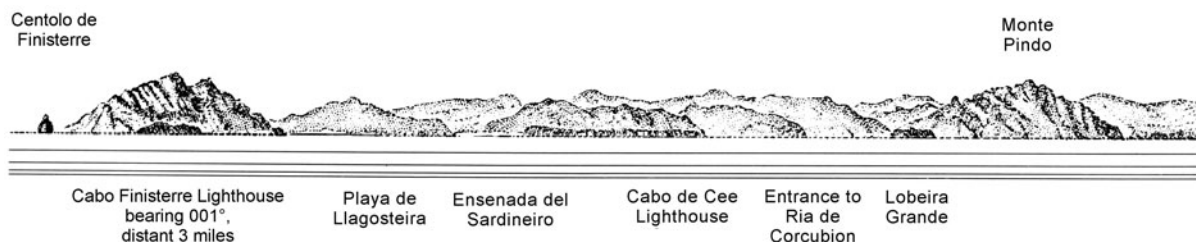
5.4 Ezaro Bay (42°54'N., 9°09'W.) is entered between Punta Galera and Punta del Pindo, 1 mile SE. It is small in extent, but provides temporary anchorage in its central part, in depths of 10 to 20m, and is partly sheltered from NW winds. Small craft can be accommodated alongside the berthing facilities at Puerto del Pindo, on the S shore of the bay.

Monte Ezaro, a high peak, stands on the N side of the Rio Ezaro which flows into the head of the bay. Monte Pindo, standing on the S side of the river, dominates this part of the coast. It may also be distinguished from the other peaks in the vicinity by the lack of vegetation.

Los Bois, a group of drying rocks, lies 1.5 miles SE of Cabo Cee. Several of these rocks resemble fishing boats at anchor. A group of rocks, awash, lies close W of Los Bois. El Asno, a rock which dries 0.6m, lies 0.3 mile S of Los Bois.

Carrumeiro Grande, a small islet lying 0.5 mile SW of El Asno, is fringed by shoal water; a truncated pyramid stands on the flat top. Lobeira Grande, a group of islets composed of yellow-colored boulders, lies 1.2 miles SW of Carrumeiro Grande. Camarinas, a rock with a depth of 4m, lies 0.3 mile S of Lobeira Grande, and Ereza, another rock with a similar depth, lies about the same distance N of the group.

Lobeira Chica, a group of above-water rocks surrounded by foul ground, lies 1.2 miles SE of Lobeira Grande. The northernmost rocks attain heights of less than 6m, but are the highest of the group. Golfeira de la Curra, a shoal with a depth of 7.6m, lies 0.7 mile E of the S end of Lobeira Chica.



Approach to the Ria de Corcubion

The coast between Punta del Pindo and Punta Caldebarcos, 3.2 miles S, is indented by several shallow and foul coves of little importance. The cove entered close E of Punta Quilmes, located 0.7 mile S of Punta del Pindo, is frequented by numerous fishing vessels during the summer.

5.5 Ensenada de Carnota (42°49'N., 9°08'W.) is entered between Punta Caldebarcos and Punta Remedios, 2.8 miles SSW. It has several small coves along its N and S sides where small craft can obtain shelter. Roda Grande, a shoal with a depth of 3.2m, lies in the center of the bay about midway between the entrance points.

Punta Remedios is steep, rocky, and fringed by numerous dangers which extend up to 1.3 miles N, 3 miles NW, and 1 mile W of it. Bajo Duyo, the outermost danger, has a least depth of 4.6m and lies 3 miles NW of the point. Piedras Minarzos, a group of small islets, lies on an area of foul ground, 1 mile W of Punta Remedios, and is the W danger. In a heavy sea, the whole area in the vicinity of these dangers is swept by breakers.

The coast between Punta Remedios and Punta Carreiro, 4.5 miles SE, is backed by uniformly high hills and peaks which makes it difficult to distinguish one from the other. Punta Insua is located 2 miles SE of Punta Remedios. A light is shown from a tower, 14m high, standing on this point.

Punta Carreiro (42°44'N., 9°05'W.) is located 2.5 miles SE of Punta Insua. Monte Louro, rocky and barren, rises from the point and has two peaks. Monte Louro Light is shown from Punta Queixal, which is located 0.5 mile ENE of Punta Carreiro. Playa de Area Mayor, within which is a lagoon, indents the coast and extends up to 1.2 miles NW of Punta Carreiro.

Cabezo de Figueiroa, a shoal with a depth of 3m, lies about 1 mile SSW of Punta Remedios.

Bajos de Los Meixidos (42°46'N., 9°12'W.), a group of shoal depths, lies centered about 5 miles WNW of Punta Carreiro. La Roncasa, nearly awash, is the shallowest part and lies on the E side of the group. There are depths of 2 to 9m over the other parts of the group and breakers usually mark these dangers.

The channel between these dangers and the coast is deep, but it is advisable to keep Cabo Finisterre bearing more than 357° when proceeding S until Piedras de Los Bruyos is in line bearing 073° with the middle of Playa de Area Mayor and with the N foot of Monte Louro.

Piedras de Los Bruyos (42°44'N., 9°09'W.), lying 2.5 miles W of Punta Carreiro, consists of three above-water rocks surrounded by a sunken ledge. In heavy weather, the sea breaks over these dangers. Bajo Ximiela, a small patch with a depth of 2.8m, and Bajo Mean, a small patch with a depth of 2.6m, lie 0.7 mile W and 0.7 mile NNW, respectively, of Piedras de Los Bruyos. Bajos Carballosas, two rocky shoals with depths of 10.5m and 18.3m, lie within 0.5 mile SE of Piedras de Los Bruyos.

5.6 The Ria de Muros (42°44'N., 9°03'W.) is entered between Punta Carreiro and Punta Castro, 3.5 miles SE, and extends in a NE direction for 9 miles. The town of Muros stands on its NW shore; the town of Noya stands on the E side of the mouth of the Rio San Francisco, which flows into the SE

side of its head. The shores of this inlet are indented by several coves, especially along the N side, and numerous below-water dangers lie off them.

Numerous mussel beds and fish havens are situated in the Ria de Muros and lie within 1 mile of shore.

The most prominent landmarks visible from seaward are Sierra de Barbanza, which rises to a summit, 618m high, 4.5 miles SSE of Punta Castro; Monte Iroite, 669m high, standing 5 miles ENE of Punta Castro; and Monte Louro, which is separated from the land to the N by a neck of low land and from a distance to the W appears as an island.

Punta Queixal (42°44'N., 9°05'W.) extends a short distance from the shore at the SE foot of Monte Louro, 0.5 mile E of Punta Carreiro. Islote de Los Leixos, a group of above-water rocks, lies on an area of foul ground, about 0.5 mile SSW of the point.

Monte Galera (42°48'N., 9°05'W.), 466m high, stands 4 miles N of Punta Queixal. Monte Cabazo, 369m high, stands 1.3 miles SW of Monte Galera and has a broad summit. Monte Oroso, a detached peak 238m high, stands 1.8 miles N of Punta Queixal.

Ensenada de San Francisco (42°45'N., 9°04'W.), entered close N of Punta Queixal, is about 1 mile wide at its entrance and recedes 0.5 mile NW. The central part of this inlet is clear of dangers and has depths of 10 to 34m. A number of buildings standing along the beaches which line the shore are used extensively by the fishing industry. Anchorage can be taken, in a depth of 15m, in the central part of the inlet, sheltered from W and N winds.

Cabo Reburdino (42°46'N., 9°03'W.) rises steeply to Monte Atalaya de Reburdino, a rounded prominent hill.

Ensenada de Muros is entered between Cabo del Punta and Punta San Anton, and has ample depths in its central part, but is obstructed by a mud flat which extends 0.5 mile from its head. Anchorage can be taken almost anywhere within this inlet. The holding ground is good and SE winds raise little sea.

Muros (42°47'N., 9°03'W.), a small harbor, lies close W of Punta del Cabo and is frequented by fishing vessels. The small and shallow basin dries at LW and is protected by a breakwater. A quay, 100m long, can accommodate small craft up to 3.9m draft at HW.

5.7 Punta Castro (42°42'N., 9°02'W.), the SE entrance point of the Ria de Muros, is the outer extremity of a small peninsula. This peninsula is joined to the mainland by an isthmus which almost covers at HW.

Punta Liseira, located 1 mile NNE of Punta Castro, can be identified by a prominent hill, 35m high, standing on it.

Bajos de La Baya, several rocky shoals, lie on an extensive bank which extends between 0.5 and 1.8 miles W of Punta Castro. La Baya, the shallowest shoal, lies awash near the center of the bank. Several other shoal patches within this bank have depths of 1.8 to 9.1m.

Roda del Vilar, a rocky shoal with a depth of 6.3m, lies about midway between Punta Liseira and Punta Balcon de Pilatos, 0.7 mile NE. The latter point consists of a remarkable mass of precipitous rocks. Punta Atalaya is located 0.5 mile farther N and is backed by Atalaya del Son, a prominent hill, which is 20m high and has a chapel situated on its summit.

Between Punta Atalaya and El Xorexo, a rocky and shallow shoal area lying 1 mile N, the coast is fronted by an extensive area of foul ground. El Son, a small and shallow fishing harbor, is situated in the S part of this area, close NE of Punta Atalaya.

Monte Enja (42°42'N., 8°59'W.), 541m high, stands 1.8 miles SE of the chapel on Atalaya del Son. It is conical and isolated from Sierra de Barbanza, which lies farther inland. Monte Dordo, a sharp ridge, 305m high, extends between this mountain and the chapel.

The Finisterre Traffic Control Center is situated on Monte Enja at an elevation of 540m.

Monte Iroite, 691m high, stands 3 miles ENE of Monte Enja. It is one of the highest mountains of the Sierra de Barbanza and the peak is very prominent from seaward.

5.8 Punta Cabeiro (42°44'N., 8°59'W.), marked by a light, rises a short distance inland to three rocky peaks, 87m high. Punta Agueira is located 0.7 mile E of Punta Cabeiro and a fish-canning factory stands on an islet lying close off it. A bridge connects the islet to the point.

Between Punta Agueira and Punta Refis de Con, 1.2 miles NE, the shore is indented by several small coves which are encumbered by shoals. Some of these coves contain small villages, with salting factories, which are fronted by piers used by fishing craft.

Monte San Lois (42°46'N., 8°55'W.), 368m high, stands 2 miles NE of Punta Refis de Con. This peak is rounded, has gradually-rising slopes, and appears dark because of the green vegetation on it.

Isla Quiebra, 27m high, lies 1 mile NNW of Punta Refis de Con. Between Punta Refis de Con and Punta Testal, 2.5 miles NE, the shore is bordered by rocky points and sandy beaches. Punta Testal is the N extremity of a low sandy projection on the W side of a creek which extends SE for 1 mile to Noya. The Rio San Francisco and the Rio del Traba flow into the head of this creek. Punta Corbeiro, located 2 miles N of Punta Refis de Con, is low and fringed by foul ground.

Noya (42°47'N., 8°53'W.), a small town, is approached through a dredged channel, 73m wide, which leads between two training walls. The belfry of the town church is prominent. A quay fronts the town and is used by small craft with local knowledge.

Freijo, a small village, stands close N of Punta Corbeiro and is fronted by a small pier; there is also a shipyard where small craft are built. The belfry of the village church is prominent. Vessels with local knowledge can obtain anchorage, in a depth of 5m, off the village.

Banco de La Misela, which mostly dries, extends across the greater part of the inlet between Punta Corbeiro and Punta Testal. Canal de Misela, a narrow channel, provides access to the upper part of the inlet and leads between the W part of this bank and the NW shore. The two rivers, which flow into the head of the inlet, are shallow and are of little commercial importance.

5.9 Cabo Corrubedo (42°35'N., 9°05'W.), the W extremity of a peninsula, is low, sandy, and bordered by foul ground. A main light is shown from a prominent tower, with a dwelling, standing on the cape.

Poza de Tierra, with a depth of 29m, is the shallowest part of a rocky bank, known as Las Pozas, which lies 5 miles WSW of the cape.

Bajos de Corrubedo, a group of detached shoals, extends up to 3 miles SSW of Cabo Corrubedo. The principal rocky heads of this group, all of which dry or are awash, include La Marosa, El Rinchador, La Tomasa, Las Baleas, and Los Cobos. Deep channels lie between some of these rocky heads, but they should only be used by vessels with local knowledge. Onshore winds raise a heavy sea over this group of shoals.

Banco de Pragueiro, a group of shoals, lies 3.5 miles S of Cabo Corrubedo and consists of some above-water rocks. In heavy weather, a dangerous sea breaks over this group of shoals.

The coast extending NNE of Cabo Corrubedo is backed, a short distance inland, by the lofty Sierra de Barbanza. Monte Taume, 775m high, stands 3.2 miles NE of the cape and is prominent. Monte Facho, 443m high, rises 1 mile SW of Monte Taume. It is whitish and a large distinctive rock, known as El Fraile, stands close NNW of the summit. The villages situated on the slopes of these two mountains are prominent from seaward.

Banco Las Basonas (42°38'N., 9°06'W.), an extensive group of rocks, lies between 1.7 and 2.5 miles NW of Punta Caraixinas, a point located 2.7 miles NE of Cabo Corrubedo. Basona Grande, at the E side of the group, is visible at all stages of the tide and is a good mark. El Guincheiro, at the SW edge of the group, is awash at HW. Banco Bustajan, with a least depth of 15m, lies about 1.7 miles NW of Basona Grande. Bajo Nuevo, with a least depth of 11.5m, lies 0.7 mile S of Basona Grande. In heavy weather, the sea breaks over all of these dangers.

Tremalleira, with a least depth of 5m, and Treito de Mar, with a depth of 18m, lie 1.3 miles SSE and 2 miles S, respectively, of Basona Grande. Bajo El Rocin, with a least depth of 13m, lies 1.5 miles WNW of Cabo Corrubedo.

Ensenada de Corrubedo (42°34'N., 9°03'W.) is entered between Punta Praseu, located 1 mile SE of Cabo Corrubedo, and Punta Grana, 2.3 miles SE. This bay is foul in its central part and is backed by sandy beaches. Monte Castro stands 2 miles NNE of Punta Grana. It is 204m high and has a group of large rocks, which resembles a fortress, situated on the summit. Monte de San Alberto, 186m high, rises 1.2 miles NE of Monte Castro. A prominent hermitage stands near the summit and is visible from seaward.

Corrubedo (42°34'N., 9°04'W.), a small drying harbor, lies within a cove, close E of Punta Praseu. There is a depth of 4m within the cove and the harbor is used by fishing boats.

The Ria de Arosa

5.10 The Ria de Arosa (42°28'N., 8°58'W.) is entered between Punta Falcoeiro, located 1 mile SSE of Punta Grana, and the W extremity of the Peninsula del Grove, 5.5 miles SE. This inlet extends 14 miles NE to its head. It is the most extensive inlet on the NW coast of Spain and provides well-sheltered anchorage over a bottom of mud. Isla Salvora and several reefs, which lie in the N part of the entrance, form a natural breakwater. Numerous islets, rocks, and reefs lie scattered

throughout the inlet, but the channels leading to the principal anchorages are well-marked and have sufficient depths.

Villagarcia and Carril, situated at the head of the inlet, are the two principal commercial centers, but several other smaller towns and villages can be found along its shores.

The entrance to this inlet can usually be easily identified by the numerous peaks which rise inland. La Curotina, 503m high, stands 6.5 miles NE of Cabo Corrubedo and is dark and prominent. Monte Castrove, 606m high, stands 10.5 miles E of the W extremity of the Peninsula del Grove and has one of the most conspicuous summits in the vicinity. Pico Lobeira, 287m high, stands 5.5 miles NNW of Monte Castrove and has a prominent red cross on its summit. Monte Xiabre, 633m high, stands 5 miles NE of Pico Lobeira and is conical and dark colored.

5.11 Islas de Sagres (42°30'N., 9°03'W.) are a group of islets, rocks, and sunken dangers which lie within 1 mile S of Punta Falcoeiro. Canal de Sagres, the channel lying between these dangers and the coastal bank, should not be attempted without local knowledge. Meixon de Vigo, a rock which dries 0.9m, lies 0.8 mile S of the E side of Islas de Sagres. Las Forcadinas, a group of above-water rocks, lies on an area of foul ground, 0.5 mile E of the same islets.

Punta Falcoeiro, located 4 miles SE of Punta Corrubedo, is the NW entrance point. It is fronted by numerous dangers. Islote Falcoeiro, lying close W of the point, is conical and the largest of a group of above-water rocks. Several prominent factory buildings are situated on the E side of Punta Falcoeiro.

Punta Centolleira, a low and stony point, is located 1.3 miles E of Punta Falcoeiro. A small fishing harbor, protected by a breakwater, is situated close SW of the point. Las Centolleiras, consisting of several above-water rocks and islets, lie on a reef which extends 1 mile SSE from Punta Centolleira. Con d'Agosto, a prominent above-water rock, is shaped like a cupola and marks the SE extremity of this reef.

A group of islets lies S of Las Centolleiras and is separated from them by El Carreiro, a channel used by small craft with local knowledge. This area contains many dangers and should be avoided by vessels without local knowledge.

Isla Salvora (42°28'N., 9°01'W.), dark and reddish in color, is the largest of a group of islands and rocks which lie on the NW side of the main channel leading into the Ria de Arosa. A main light is shown from a tower, with a dwelling, 16m high, standing on the S end of the island.

Picachos Gralleiras, a group of peaks, rises to a height of 69m near the S end of the island and is prominent. Cerro Milreu, with a prominent isolated summit, rises to a height of 32m near the NE end of the island. A number of above-water rocks lie on a rocky shelf which extends 0.5 mile N from the island. They terminate in a group of rocks, awash, known as Piedras Pardinas. Anchorage can be taken, in depths of 10 to 15m, close NE of the E extremity of Isla Salvora.

5.12 The Peninsula del Grove (42°28'N., 8°54'W.), which lies on the SE side of the entrance, is composed of granite with an uneven surface. It is joined to the mainland by a narrow and sandy peninsula. La Garita, 92m high, stands on the W part of the Peninsula del Grove. The village of San Vicente is situated on the N slope of this hill.

Rodal de Las Figueiras, a shoal bank with a least depth of 16m, lies 1.5 miles WSW of Punta de La Miranda, the S extremity of the Peninsula del Grove. The sea breaks on this bank at times.

Bajo Pajarina, a shoal with a depth of 1.6m, lies 0.7 mile WSW of Punta de San Vicente, the NW extremity of the peninsula. Islote Pombeiro lies 0.3 mile W of Punta de San Vicente and an above-water rock lies near the outer end of the foul ground which extends 0.2 mile N from the islet. A light is shown from a tower, 14m high, standing on this above-water rock which is known as Pombeirino.

From the entrance of the inlet, the fairway leading to its upper reaches extends N for 3 miles. It passes E of Sinal de Castro Fuera, which is marked by a lighted buoy, and W of Bajo Esqueiros, which lies 2 miles N of the NW extremity of the Peninsula del Grove. It then continues NE for 2 miles and passes between Isla Rua, a barren and prominent rock, and Jidoiro Pedrigoso, a low islet. Bajo Meixons, a drying reef, lies 0.5 mile S of this islet.

The fairway then extends NNE for 2 miles and passes between Conle Baxe, a shallow rock, and Bajo Ter, a rock with a depth of 7.4m. From Bajo Ter, the fairway extends ENE for 4 miles to the roadstead anchorage off Villagarcia. It passes S of Moscardino and Fanequeira, and N of Bajo El Seijo. Moscardino is a rock, with a depth of 8.2m, and Fanequeira is a shoal, with a depth of 8.7m. Bajo El Seijo is a drying rock.

Navigational aids mark the sides of the fairway and most of the dangers described above. Vessels should experience no difficulty in making the transit from the entrance of the inlet to the roadstead anchorage off Villagarcia.

5.13 Punta del Castro (42°32'N., 9°00'W.), located 2.1 miles NE of Punta Falcoeiro, is steep and can be identified by a fish factory which stands on it. A small village, situated close NE of this point, is fronted by a quay used by fishing vessels.

The coast between Punta del Castro and Punta Ameixida, a rocky point 0.7 mile NE, is fronted by Banco Castineiras. Numerous above and below-water rocks lie within the limits of this bank, which extends up to 1 mile SE.

Ensenada de Santa Eugenia (42°33'N., 8°59'W.) is entered between Punta Pativa, located 0.7 mile N of Punta Ameixida, and Punta Aguiuncho, 1.3 miles NE. This bay is bordered by an extensive sandy beach, but numerous dangers encumber its approaches. The village of Santa Eugenia de Riveira stands along the SW shore of the bay and contains several fish processing factories. Several quays, protected by a long breakwater, front the village and are used almost exclusively by fishing vessels with local knowledge.

Ensenada de Palmeira (42°35'N., 8°57'W.) is entered between Punta Grades and Punta Cornas, 1.2 miles NE. This bay is encumbered by dangers, which extend up to 0.3 mile off-shore, and several islets lie along the shore. Palmeira, a small drying harbor, stands on the SW shore of the bay, close E of a village, and is frequented by fishing boats with local knowledge.

Ensenada de La Puebla del Caraminal (42°36'N., 8°56'W.), a small bay, is entered 0.7 mile NW of Punta Ladina. It has depths of 9 to 20m but a wide bank fringes the shore. Lugar de Jobre, a village with a prominent church, stands on the S bank of the Ria San Antoni, which flows into the SW part

of the bay. Caraminal, a village, is situated at the head of the bay and is fronted by a quay which is protected by a breakwater and mostly used by fishing vessels. Several fish canning factories are situated in the village and shellfish beds lie in the vicinity of the harbor. Anchorage can be taken, in depths of 10 to 11m, close W of the harbor.

Ensenada de Barrana (42°37'N., 8°54'W.) is entered between Punta de Cabio and Cabo Cruz, 2 mile NE. This small bay is fringed by foul ground and an extensive beach lies at the head. Torre Goyanes, a prominent tower, stands 0.2 mile N of the mouth of the Rio Corona, which flows into the NW side of the head. A conspicuous bridge spans the mouth of this river, which can be navigated by small boats. The villages of Escarbote and Esteiro are situated on the W and E sides, respectively, of the bay.

Cabo Cruz (42°37'N., 8°53'W.) is the outer extremity of a narrow tongue of land which extends 0.3 mile S from the general line of the coast. A small drying harbor, used by fishing boats, lies on its W side. Between Cabo Cruz and Punta del Chazo, 1.2 miles ESE, the coast is fronted by an extensive area of foul ground which extends up to 0.7 mile offshore.

5.14 Punta de San Vicente (42°29'N., 8°56'W.), the NW extremity of the Peninsula del Grove, is fronted by Laxes de San Vicente, a group of dangerous rocks, which lies 0.3 mile NNE and is marked by a lighted buoy.

Between Punta de San Vicente and Punta Cabeza del Moro, 2.3 miles ENE, the coast is fringed by foul ground which extends up to 0.3 mile offshore. Ensenada de Melojo, a small and shallow bay, lies 0.3 mile S of Punta Cabeza del Moro and provides anchorage to small craft.

Piedras Salvores, a group of rocky shoals, lies centered 1.5 miles NE of Punta de San Vicente and is marked by a beacon.

Ensenada del Grove (42°28'N., 8°51'W.), a bay, lies between the E side of the Peninsula del Grove and the mainland. It extends 3 miles S and is almost completely obstructed by drying banks. Several narrow and shallow channels lead through these banks to the head. Isla Toja Grande is the largest of several islands which lie in the entrance to the bay. It is connected to the Peninsula del Grove by a causeway.

The village of San Martin del Grove stands on the W side of the entrance to the bay and is fronted by a small harbor. It is protected by breakwaters and used mostly by fishing boats. Several fish processing plants are situated in the village.

Ensenada de Cambados (42°31'N., 8°49'W.), a small and shallow bay, lies 1.2 miles NE of the N end of Isla Toja Grande. It is obstructed by drying banks and numerous shoals. The villages of Santo Tome, Cambados, and Fefinanes are situated along the shores of this bay and numerous shellfish beds lie in their vicinity.

Monte Castrove, 610m high, stands 6 miles SE of Cambados and is conspicuous from seaward. The churches standing in the villages of Cambados and Fefinanes are also conspicuous. Sheltered anchorage can be taken by small craft, in depths of 7 to 9m, sand, about 0.7 mile W of Cambados.

Isla de Arosa (42°33'N., 8°52'W.) is located 2.8 miles NNE of the NE end of the Peninsula del Grove. This island is long and consists of three parts joined by two narrow necks of land.

Its highest peak rises in the NW part. The shores of the island are indented by numerous small coves and inlets, most of which are obstructed by drying banks and foul ground.

A extensive rocky bank, on which lies several small islets and rocks, extends up to 1.7 miles W of the W side of the central part of the island. A small and shallow bay, encumbered by shoals, lies NNW of this bank and the village of San Julian de Arosa stands at its head. The island is connected to the mainland by a bridge and an overhead cable which extend between its E extremity and Punta Valeiro, 0.8 miles E.

Villanueva de Arosa (42°34'N., 8°40'W.), a small town, stands on the E shore of the Ria de Arosa, directly E of the NE extremity of Isla de Arosa. It is situated on the N bank of the mouth of the Rio Curras and fronted by a small and shallow harbor which is protected by breakwaters and used by fishing boats. Numerous rocks lie on both sides of the river entrance, but small craft can enter at HW.

5.15 The Head of the Ria de Arosa.—The head of the inlet is entered between Punta Sinal de Boeiro and Punta del Chazo, 2.3 miles NW, and extends N and NE. The small port of Villagarcia is situated within a bay on the SE side of the head.

Between Punta del Chazo and Punta Piedra Rubia, 1.5 miles NNE, the coast is indented by a bay which is obstructed by dangers. Vigia de Ancados, a ruined lookout tower, is situated on the summit of a tree-covered hill, 66m high, which stands 1 mile NNW of Punta del Chazo. It is reported to be hard to distinguish because of the trees in the vicinity. Las Hermanas, two above-water rocks, lie at the outer end of a drying reef which extends 0.7 N of Punta del Chazo. Isla Ostral, a low islet, lies on a drying reef which extends 0.5 mile S from the N side of the bay. Bajo Las Rodas, a detached shoal with a least depth of 3.2m, lies 0.5 mile NE of Punta Piedra Rubia.

Ensenada de Rianjo (42°39'N., 8°50'W.), entered between Punta Porto Mouro and Punta Fincheira, 1 mile NE, is mostly shallow and of little commercial importance. Monte Treito, 628m high, stands about 6 miles N of Ensenada de Rianjo and is visible from all parts of the Ria de Arosa.

The Rio Ula discharges into the NE side of the head of the Ria de Arosa, between Punta del Castro and Isla Cortegada, 1 mile ESE. A rock, which resembles a fortress in ruins, stands on Punta del Castro. This river is navigable at HW by small craft, with shallow drafts, as far as Cesures Bridge, 10 miles upstream. The town of Padron is situated 1 mile above the bridge.

Isla Malveira Grande (Isla San Bartolome), 8m high, lies on the S part of a shoal which extends 1 mile WSW from Isla Cortegada. This islet is prominent because of its rugged cliffs and small square-shaped summit. Several dangers lie within 0.5 mile W and NW of it.

5.16 Punta de Las Sinas (42°35'N., 8°50'W.), located 2.7 miles SW of Isla Cortegada, is fronted by several rocks, 1 to 4m high, which lie up to 0.3 mile offshore. A detached shoal lies about 0.5 mile W of the point.

Ensenada de Gorma, which is fringed by foul ground along its shores, lies between Punta de Las Sinas and Punta Preguntoiro, 1.5 miles ENE. Islote Gorma lies in the middle of this small bay. Monte Arians or Sobran, 207m high, stands 1.5 miles SSE of Punta Preguntoiro and can be identified by its bare and rounded summit.

Ensenada de Villagarcia (42°36'N., 8°47'W.) is entered between Punta Preguntoiro and Isla Malveria Grande. The depths in the approach are moderate, whereas, the N and NE sides of the bay are shallow. A dredged channel, with a least depth of 7m, leads into the bay.

Between Punta Preguntoiro and Punta Ferrazo, 0.7 mile NE, the coast is fringed by foul ground extending up to 0.3 mile offshore. A breakwater extends in a NNW direction from Punta Ferrazo. Villajuan, a small harbor, is situated 0.3 mile NE of Punta Preguntoiro and is frequented by fishing boats. Carril, situated on the N side of the bay, is fronted by a small and shallow harbor which is protected by a breakwater and used by small craft.

5.17 Villagarcia (Villagarcia de Arosa) (42°36'N., 8°46'W.) (World Port Index No. 37830), a small port, is situated 13 miles from the ocean in the S part of Ensenada de Villagarcia. The harbor is protected by a breakwater on its W side, several islets and shoals on its N side, and the mainland on its E side.

Tides—Currents.—Tides rise about 3.6m at springs and 2.8m at neaps.

Depths—Limitations.—Vessels enter the harbor through a dredged channel, 200m wide, with a least depth of 7m. An area, with a diameter of 225m, is dredged to a depth of 7m and is used as turning basin.

Pier limitations are, as follows

Pier	Length	Depth alongside
Muelle Commerciale	559m	6.4-6.7m
Muelle de Pasajeros	410m	2.8m
Muelle de Ramal	330m	3.0-6.7m
Escollera de Feriazó	—	10.0m

The harbor has facilities for tanker, bulk, general cargo, ro-ro, and passenger vessels. It was reported (1993) that a vessel of 33,690 dwt, 183m in length, and 8.2m draft had been accommodated in the port at HW.

Pilotage.—Pilotage is compulsory for vessels of more than 500 gt. Vessels should sent an ETA through their agent at least 24 hours in advance. Pilots may be contacted on VHF channels 12 and 16 and board in position 42° 35.7'N, 8° 50.0'W Pilotage is also provided for Cambados, Caraminal, and Riveira.

Anchorage.—Anchorage can be obtained by ocean-going vessels, in depths of 5 to 6m, N of Punta Ferrazo. Small vessels can anchor, in a depth of 4m, close E of the point. Ocean-going vessels can also anchor, in depths of 11 to 14m, 0.7 mile NNW of Islote Gorma (42°35'N., 8°48'W.).

Caution.—During the fishing season, from April to December, care should be taken to avoid the numerous fishing nets which may be encountered within the inlet.

Shellfish beds are situated at numerous places along the shores of the inlet.

The Ria de Arosa to the Ria de Pontevedra

5.18 Ensenada de la Lanzada (42°27'N., 8°54'W.) is entered between Punta de la Miranda, the SW extremity of the Peninsula del Grove, and Punta Fagilda, 3 miles SE. This bay is bordered by several beaches, with the exception of its SE part, which is steep and rocky. Punta Lanzada is located at the S end of Playa de Lanzada, an extensive beach lying at the head of the bay. A prominent hermitage stands on the point. Sheltered anchorage can be taken by vessels, in depths of 12 to 14m, about 0.7 mile off the beach, but local knowledge is advisable and this anchorage should be vacated if the wind veers to the W.



Villagarcia from S



Villagarcia—Muelle Commercial

Islas Ons (42°22'N., 8°56'W.), consisting of two islands fringed by reefs, lies in the S approach to Ensenada de la Lanzada. Isla Ons, the largest island, is located with its N end lying 2 miles SW of Punta Fagilda. Centollo Grande, 87m high, is a rounded hill standing at the N extremity of the island. A main light is shown from a tower, 12m high, standing at the center of the island.

The W side of this island is rocky and foul and should be given a berth of at least 1.5 miles. La Loba, a rock awash, lies on a reef which extends 0.2 mile from Punta Fedorento, the SE extremity of the island. Bajo Zacarias, with a depth of 8.5m, lies 1 mile NNW of the NW extremity of Isla Ons. In heavy weather, the sea breaks over this detached rocky patch.

Isla Onza (42°21'N., 8°56'W.), a small and rounded island, lies S of Isla Ons and is separated from it by a narrow passage, 250m wide. A drying reef extends about 300m from Punta Galera, the S extremity of this island, and a detached patch, with a depth of 3.4m, lies 0.3 mile ESE of it. Several other dangers lie up to 1.2 miles S of the S extremity of this island.

The passage between Punta Fagilda and the N end of Isla Ons is 2 miles wide, but it is obstructed by several dangers and only vessels with local knowledge can navigate it.

Picamillo, a shoal with a least depth of 2.7m, lies 0.7 mile SW of Punta Fagilda. A light is shown from a tower, 13m high, standing on Picamillo. The passage between this danger and Punta Fagilda is known as Paso de La Fagilda.

Lomba de Besta, a 4.2m patch, lies 0.3 mile W of Picamillo. The entire area between Isla Ons and Picamillo breaks when a heavy sea is running.

The Ria de Pontevedra

5.19 The Ria de Pontevedra (42°22'N., 8°50'W.) is entered between Punta Cabicastro, located 2.7 miles SE of Punta Fagilda, and Cabo Udra, 2.5 miles S. This inlet extends 8 miles NE to its head and has a bottom of mostly mud. It is easy to

enter as it is partially protected from W winds and seas by the Islas Ons. The land along both shores is high, but is broken by numerous well-cultivated valleys. Monte Faro Domayo, very conspicuous from seaward, is the highest peak standing on the peninsula which separates the Ria de Pontevedra from the Ria de Vigo to the S.

Care should be taken not to mistake Islas Ons for Islas Cies, lying 8 miles farther S. The former islands are much lower, whereas the latter are bare and rugged.

Punta Cabicastro (42°23'N., 8°50'W.), 45m high and steep, is the N entrance point of the inlet. Helmo, a drying rock, lies close S of the point.

Porto Nova, a small fishing harbor, lies at the head of a cove, 1 mile NE of Punta Cabicastro. It has a depth of 3m and is protected by a breakwater.

Sangenjo Village is situated on the N side of the inlet, 1.7 miles NE of Punta Cabicastro. It is fronted by a small harbor, which is protected by a breakwater and a mile built on a reef. During fine weather, temporary anchorage can be taken, in a depth of 20m, off a beach lying W of the village.

Punta Festinanzo, located 1.5 miles SE of Sangenjo, is low, rocky, and fronted by a group of shoals which extend up to 1 mile SW of it. There are depths of 1 to 18m over this group, and during heavy weather, breakers mark this danger.

The coast between Punta Festinanzo and Punta Chancelas, 2.3 miles NE, is bordered by foul ground which extends 300m offshore. Temporary anchorage can be taken, in depths of 9 to 11m, about 400m offshore, 2 miles NE of Punta Festinanzo.

5.20 Cabo Udra (42°20'N., 8°50'W.), the S entrance point of the inlet, is low but rises to a rocky, barren hill 0.3 mile to the E. A similar hill stands 1 mile farther SE. When viewed from the NE or SW, these hills appear isolated because of the deep valley which lies between them.

Between Cabo Udra and Punta Trimino, 1.8 miles E, the coast is bordered by foul ground extending up to 0.3 mile

offshore in places. Cabezo de Mourisca, a detached shoal with a least depth of 0.1m, lies about 1 mile NE of Cabo Udra.

Ensenada de Bueu (42°20'N., 8°47'W.) is entered between Punta Trimino and Punta Monte Gordo, 1.7 miles E. This small bay has a series of beaches and rocky points along its shores. Monte Liboreiro, 329m high, stands 2.5 miles S of Punta Trimino. It has a prominent and isolated, conical peak. Piedra Blanca, an above-water rock with a white top, lies close off the E side of Punta Trimino. A large factory building stands in a cove, close S of this rock.

The small town of Bueu is situated at the head of the bay and is fronted by a small harbor used by fishing boats. Good anchorage can be taken SE of Punta Trimino, sheltered from all except N winds. Large vessels can anchor, in depths of 11 to 15m, close N of the town.

Monte San Lorenzo (42°19'N., 8°44'W.), 434m high, stands 1.7 miles SE of Punta Monte Gordo and can be identified by a prominent cleft which divides its tip into two peaks. Isla San Clemente, a rocky islet, lies 200m offshore, NE of Punta Monte Gordo. The prominent ruins of a chapel stand on it.

Between Isla San Clemente and Punta Loira, 1 mile NNE, the coast is higher than at any other part on the SE side of the inlet. Punta Loira rises abruptly to Monte Loira, a fairly prominent hill, 116m high.

5.21 The Head of the Ria de Pontevedra.—Isla Tambo (42°25'N., 8°43'W.), 72m high, is a steep island which lies in the middle of the inlet between Punta Chancelas and Punta Pesqueira. A large ruined building stands on its NW side and a light is shown from a tower standing at the S extremity.

Ensenada de Combarro, a shallow and partly drying bay, is entered at the head of the inlet between Punta Chancelas and Punta Campelo, 1.2 miles E. The monastery of San Juan de Poyo, a dark stone building with two towers, stands 0.5 mile NE of the head of this bay. The village of Combarro is situated at the W side of the bay and is fronted by a small harbor used by fishing craft.

Pontevedra (42°26'N., 8°39'W.), the capital of the province of the same name, stands on the SE bank of the Rio Lerez, 2 miles upriver. The mouth of this river lies 0.7 mile E of Isla Tambo and is entered between two parallel training walls. The bar at the entrance, which dries and frequently shifts, can be crossed at HW by small local vessels with drafts up to 2m. In the inlet at the mouth of this river, the flood current attains a rate of 2.5 knots and the ebb current a rate of 3 knots; during freshets the rate of the ebb may increase to 4 knots.

5.22 Puerto de Marin (42°24'N., 8°42'W.) (World Port Index No. 37860), a small port, lies on the S side of the head of

the Ria de Pontevedra, 0.7 mile SSE of Isla Tambo. The Spanish Naval Academy is situated here, but it is also a base for a large fishing fleet.

Tides—Currents.—Tides rise 3.4m at springs and 2.6m at neaps.

Depths—Limitations.—The naval facilities, which include about 900m of berthing space, are situated in the W part of the harbor; the commercial facilities are situated in the central part; and the base for the fishing fleet, which includes about 1,200m of berthage, is situated in the E part.

The main commercial facilities include Muelle Commercial, which has 850m of total quayage, with depths of 2 to 9m alongside; Muelle de Ribera, which has 140m of total quayage, with a depth of 5m alongside; the fishing basin, which has dredged depths of 4 to 6.5m alongside; and Muelle Comercial Nuevo, which has 242m of quayage, and depths of 9 to 12m alongside.

Vessels up to 229m in length and 11m draft have been accommodated alongside.

Pilotage.—Pilotage is compulsory. Vessels should send an ETA through their agent at least 24 hours in advance. Pilots may be contacted on VHF channel 12 and generally board between Cabo Udra and Isla Ons.

Anchorage.—Anchorage can be obtained, in depths of 17 to 20m, sand, between 0.5 mile W through SW of Isla Tambo.

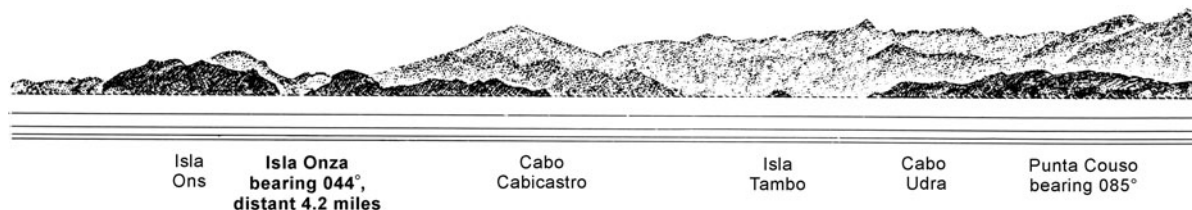
Caution.—Shellfish beds lie along the shores of the inlet in many places.

The Ria de Pontevedra to the Ria de Vigo

5.23 Punta Couso (42°18'N., 8°51'W.), marked by a light, is located 2 miles SSW of Cabo Udra and is fronted by rocks extending up to 0.5 mile offshore. The coast between is indented by the Ria de Aldan, a fairly deep and well-sheltered inlet. Las Cabadas, a rocky bank which breaks during onshore gales, lies in the middle of the entrance to this inlet, 0.8 mile N of Punta Couso.

The Ria de Aldan is deep in its central part but is foul up to 0.5 mile from its shores. Sandy beaches, separated by rocky points, line its steep shores. A channel, with depths of 9 to 33m, extends as far as the head of the inlet and is clear of dangers. Several fish processing plants, with small piers, are situated along the shores.

Anchorage can be taken, in a depth of 14m, about 0.7 mile NNW of the mouth of the Rio Aldan, which flows into the head of the inlet. Small vessels can anchor, in depths of 3 to 4m, close off the mouth of this river.



Entrance to the Ria de Pontevedra from SW



Puerto de Marín

The coast between Punta Couso and Cabo del Home, 3.5 miles S, consists of high, steep shores. Alto de La Cruz, a hill surmounted by a cross, stands 0.3 mile S of Punta Couso. Monte Facho, 177m high, stands 1.7 miles S of Alto de La Cruz. It is very conspicuous and can easily be identified by the town standing on the summit. Las Osas, a group of above-water rocks, lies at the outer end of a bank which extends 0.5 mile SW of Punta Couso.

Approach to the Ria de Vigo

5.24 Islas Cies (Islas de Bayona) (42°13'N., 8°54'W.), consisting of four islands, front the entrance to the Ria de Vigo and form a natural breakwater. They are bare, high, and rugged and can easily be identified.

Isla de Monte Agudo is the N island of the group. The N channel, which leads into the Ria de Vigo, passes between this island and the mainland. Punta Caballo, the N extremity of this island, rises to Monte del Caballo, a 191m high peak. Monte Agudo, 174m high, stands 0.5 mile SE of the point. A prominent monument, 16m high, stands on Punta Muxeiro, the SE extremity of the island. A light is shown from a tower, 5m high, standing on the NE side of the island.

A shoal bank, with drying rocks, extends about 1.3 miles NW from Punta Caballo, the N extremity of the island. Mouselos, a shoal with a depth of 12m, lies about 0.7 mile W of the same point. No attempt should be made to cross this bank because of the irregular depths. The sea breaks heavily over these dangers during bad weather and they should be given a wide berth. Dangerous submerged rocks lie 0.5 mile SW and 1 mile SSW of Punta Caballo.

Isla de Faro (42°13'N., 8°54'W.) lies S of Isla de Monte Agudo and is connected to it by a sandy ridge known as Area das Rodas. A factory building, fronted by a small pier used by fishing vessels, stands on the N end of this ridge. Monte Faro, 173m high and steep, stands on the SW end of the island. A

main light is shown from a tower, 10m high, standing on the summit. A Isla Vinos, which consists of two islets joined by a reef, lies close S of Punta das Vellas, the E extremity of the island. Ruso, a shallow shoal, lies 0.5 mile NW of the SW extremity of Isla de Faro from which a light is shown.

Freio de La Porta, the passage between Isla del Faro and Isla de San Martin, is bordered by rocky ledges which front both islands. During good weather, this passage, which is 0.3 mile wide, can be used by local vessels with drafts up to 5m.

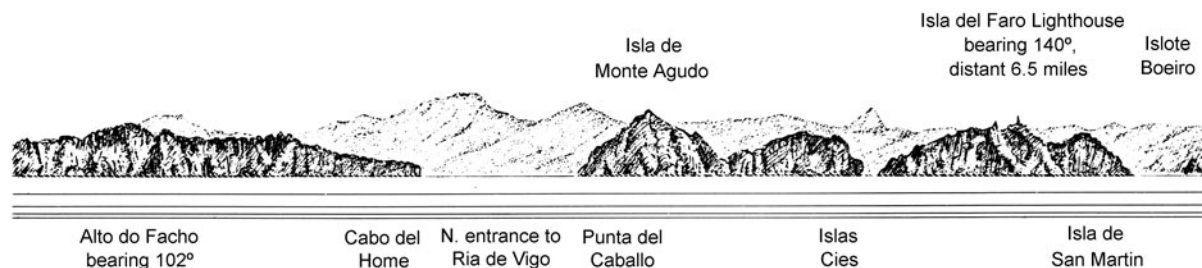
Isla de San Martin (42°12'N., 8°54'W.) is located S of Isla del Faro. Monte Pereira, 177m high, stands on the E side of the island and is its highest summit. The W coast of the island is steep-to, whereas, the S coast is fringed by foul ground extending up to 0.3 mile offshore. Playa de San Martin, a prominent extensive beach, borders the NE side of the island and a light is shown from Cabo Vicos, the SE extremity of the island.

Los Gabotos, with a least depth of 2.1m, and Bajos Forcados, awash, both lie 0.5 mile SW of Isla de San Martin. Leixon de Piedra Muerta, a group of drying rocks, lies at the outer end of a reef which extends 0.4 mile S of Cabo Vicos. Bajo Carrumeiro, a detached shoal with a depth of 2.6m, lies 0.3 mile ENE of Cabo Vicos.

Islote Boeiro (42°11'N., 8°55'W.), 21m high and rugged, lies 1 mile SW of Cabo Vicos. Castros de Agoeiro, a group of shoals with depths of 4 to 7m, lies 0.5 mile S of this islet. A light is shown from a tower, 7m high, standing on the Islote Boeiro.

The Ria de Vigo

5.25 The Ria de Vigo (42°13'N., 8°51'W.) is entered between Cabo del Home and Cabo Silleiro, 8.7 miles S. It extends 15 miles in a general NE direction and is bordered on both sides by high terrain. Several small bays, which provide sheltered anchorage, lie along the shores. About 10 miles above the entrance, the inlet narrows to a width of only 0.3



North approach to the Ria de Vigo

mile and then opens into Ensenada de San Simon, a shallow basin of little importance to ocean-going vessels. A suspension bridge, with a vertical clearance of 38.8m, spans the narrowest part of the inlet.

The two main entrance channels pass on either side of Islas Cies. Both of these channels are deep and have wide fairways. Canal del Norte, the N channel, passes between Cabo del Home and the NE side of Isla de Monte Agudo. Canal del Sur, the S channel, passes between Cabo Silleiro and Isla de San Martin. The N channel has a least depth of 36m and there are depths of 16 to 44m in the central part of the inlet.

Vigo, the principal city, stands on the SE side of the inlet. In addition, there are several other villages situated along both shores, the most important of which are Cangas, on the NW side, and Bayona and Coia, on the SE side.

5.26 North side.—Cabo del Home (42°15'N., 8°52'W.) and Punta Robaleira, 0.3 mile S, are the NW and SW extremities of a dark rocky promontory which forms the N side of the entrance. Punta Subrido, located close SE Punta Robaleira, is the S extremity of this promontory, and a reef extends about 200m S of it.

A light is shown from Punta Robaleira; range lights are shown from structures standing on Cabo del Home and Punta Subrido.

Ensenada de Barra is entered between Punta Subrido and Punta Corbeiro dos Castros, 1.5 miles E. This bay is steep and rocky on its W side and has a sandy beach at its head. During N winds, vessels can anchor, in depths of 12 to 20m, sand, within this bay. A factory, fronted by a ruined pier, stands about midway along the W shore of this bay.

Bajos Castros de Barra, a reef covered with drying rocks, extends 0.5 mile S from the coast, about midway between Punta Corbeiro dos Castros and Punta Roca dos Patos, 0.3 mile E. The sea breaks on this reef at LW and it is marked by a lighted buoy moored close S.

Banco de Melide, with a least depth of 17.7m, lies 1.2 miles S of Punta Corbeiro dos Castros.

Ensenada de Limens (42°15'N., 8°49'W.) is entered between Punta Roca dos Patos and Punta Fanequeiro, 1 mile E. It is bordered by a bank along its W side which extends up to 0.3 mile offshore. A rock, awash, lies on the outer part of this bank. The E side of the bay is fairly steep-to, whereas, its N side is shoal. Numerous small craft shelter in Puerto de Santa Marta, a small cove, lying on the E side of this bay, near the

head. It is reported that numerous shellfish beds lie within the bay.

Punta Borneira, located 0.7 mile ESE of Punta Fanaqueiro, is the outer extremity of a projection which separates Ensenada de Limens from Ensenada de Cangas. Bajo Borneira, an above-water rock, lies on the outer end of a reef which extends about 0.4 mile S from Punta Borneira. A light is shown from a tower, 11m high, standing on this rock.

Ensenada de Cangas (42°15'N., 8°47'W.) is entered between Cabo Balea, located close E of Punta Borneira, and Punta Rodeira, 1.2 miles NE. This bay is fairly steep-to in its central part, but shoals towards the head. The W entrance point of the bay rises steeply to a hill, 111m high, with a prominent white chapel standing on its summit. Pico Castelo, a prominent hill, stands 1.5 miles N of the W entrance point and the ruins of a tower are situated on its summit. Monte Magdalena, 342m high, stands 1 mile NNE of Pico Castelo and is also prominent. The ruins of several factory buildings are situated in the vicinity of Cabo Balea, the W entrance point.

The village of Cangas stands in the NW part of the bay at the W end of an extensive beach known as Playa de Cangas. The small harbor, which fronts the village, has shallow depths. It is protected by a breakwater and used by fishing boats. Vessels can anchor, in depths of 10 to 12m, off the village.

Bajo Salgueiron, a dangerous shoal, lies off the entrance to Ensenada de Cangas, about 0.5 mile SE of Cabo Balea. It is marked by a lighted buoy moored close S.

The coast between Punta Rodeira and Punta del Con, 1.5 miles NE, is fronted by a rocky ledge which extends up to 0.5 mile offshore and dries in places. This ledge is marked by a lighted buoy moored 0.5 mile SSE of Punta Rodeira. Con de Pego, a reef, lies at the edge of the ledge and a light is shown from a tower, 4m high, standing on it.

Ensenada de Moana (42°17'N., 8°43'W.) is entered between Punta del Con and Punta Arroas, 1.2 miles E. The village of Moana is situated on the W side of this bay. It is fronted by a small harbor which is protected by a breakwater extending from Punta del Con. The harbor is used by fishing vessels and small craft.

The Rio de Meira flows into the head of the bay. Isole de San Bartolome, on which a chapel stands, lies on the W side of the mouth of the river and is connected to the mainland by an area of reclaimed land. A small harbor, protected by a breakwater, is situated at the S side of this islet and is used by small craft.

It is reported numerous shellfish beds lie within Ensenada de Moana.

5.27 South side.—**Cabo Silleiro** (42°07'N., 8°54'W.), the S entrance point of the Ria de Vigo, has a high and bold face. The cape is fronted by a reef which extends 0.7 mile NW of it and in places is awash. During heavy weather, the sea breaks up to 1 mile off the cape and it should be given a wide berth.

The coast between Cabo Silleiro and Punta del Buey, 2.3 miles ENE, is steep and fronted by foul ground and a reef. Pico Sanson, 72m high, stands 0.5 mile SW of Punta de Buey. A light-colored stone statue, known as Virgen de La Roca, is situated on this hill and is an excellent landmark.

A disused light tower is situated at the extremity of the cape. A main light is shown from a tower, with a dwelling, 30m high, standing 0.4 mile S of this disused tower. A radiobeacon is situated at the light tower.

Punta del Buey is the N extremity of the Peninsula de Monte Real, a tree-covered headland, fronted by a reef. A prominent walled castle, with a tower at its N end, stands on this headland. El Halladizo, with a depth of 10.5m, lies 0.5 mile WNW of Punta del Buey, at the outer edge of several shoals. During rough weather, a heavy sea breaks over these dangers.

Ensenada de Bayona (42°07'N., 8°51'W.) is entered between Punta del Buey and Monte Ferro, 1.3 miles N. It is open to the W, but is partly sheltered by the shoals, which extend up to 0.7 mile NW of Cabo Silleiro, and the group of islets which extends up to 1.5 miles W of Monte Ferro.

Bayona, a summer resort, is situated in the SE corner of the bay. It is fronted by a small harbor which is protected by a breakwater and mostly used by local small craft and yachts. Small vessels can anchor, in a depth of 7m, mud, close S of the head of the breakwater.

Panjon, a small harbor, is situated at the NE side of the bay and used by small craft with local knowledge.

Punta Lameda, from which a light is shown, is located 1.7 miles N of Punta del Buey. This point is the NW extremity of the peninsula formed by Monte Ferro and is fringed by a reef.

Picos de Galineiro, 707m high, rises 7 miles E of Punta Lameda. This mountain has three summits, with the central one being the highest.

Monte Parada, 412m high, stands 4.5 miles ESE of Punta Lameda and is prominent. Monte Nuestra Senora del Alba,

521m high, stands 2.3 miles NNE of Monte Parada; a hermitage is situated on the N side of its summit. Monte Corujo, 455m high, stands 2.3 miles NNW of Monte Parada.

5.28 Las Estelas (42°09'N., 8°52'W.), a group of islets, lies on a rocky ledge which extends up to 1.5 miles W from the SW side of Monte Ferro. A light is shown from a tower, 6m high, standing on Las Serralleiras, an islet lying at the W end of the group. Several dangers lie up to 0.7 mile NW of the light and are marked by a lighted buoy.

El Carreiro, a shoal with a depth of 6.6m, lies 0.5 mile NE of Punta Lameda and breaks in heavy weather. Numerous other dangers lie between this shoal and Monte Ferro.

The coast between Punta Lameda and Cabo Estay, 2.3 miles NE, is fringed by foul ground which extends up to 0.3 mile offshore in places.

A measured distance, 2,011.1m long, is situated off this stretch of coast. It is marked by towers and may best be seen on the chart.

Cabo Estay (42°11'N., 8°49'W.) is dark, steep, and fronted by a reef. Bajo Bondana, a detached patch with a depth of 2.7m, lies at the outer end of an area of foul ground which extends up to 1 mile N of the cape.

Range lights, which indicate the fairway through the S entrance channel, are shown from towers standing on the cape. A radiobeacon and a racon are situated at the front light.

Toralla, a small town, is situated 1 mile ENE of Cabo Estay and fronted by a shallow harbor. Isla de Toralla lies near the outer part of a shoal which extends up to 0.7 mile N and 0.5 mile NW of the town. This islet is joined to the mainland by a causeway and a conspicuous building stands at its N end. Los Travesos, with a least depth of 7.5m, lies about 0.7 mile NNE of Isla de Toralla. An outfall pipeline extends 1 mile NW from the shore, about 0.7 mile NE of the islet.

Cabo de Mar, located 1.7 miles NE of Toralla, is low and formed of white sand. Between this cape and Punta del Molino, 0.5 mile NE, the coast is fronted by foul ground and detached shoals which extend up to 0.6 mile offshore. These dangers are marked at the outer edge by a lighted beacon. A large conspicuous factory building stands on Punta del Molino.

Picos de Galineiro
(3 peaks) Pyramid
bearing about 091°



Monte Parada

Coast in the vicinity of Monte Parada

Puerto de Vigo (42°14'N., 8°44'W.)

World Port Index No. 37900

5.29 Puerto de Vigo extends along the SE side of the Ria de Vigo, 7 miles within the entrance. The harbor is divided into three parts. The W part is used by the fishing fleet, the central part by passenger and commercial vessels, and the E part by the Spanish Navy.

Tides—Currents.—Tides rise 3.5m at springs and 2.7m at neaps.

The tidal currents within the Ria de Vigo set NE during the flood and SW during the ebb; they attain rates of 0.5 to 1 knot. The direction and force of the wind greatly influences the rise of the tide and the currents.

Depths—Limitations.—Information about the main commercial facilities is given in the accompanying table.

Puerto de Vigo—Berthing Facilities		
Pier	Total length	Depth alongside
Muelle de Transatlanticos	552m	12.0m
Muelle de Comercio	250m	8.5m
Muelle Transversal	636m	9.0m
Muelle de Arenal	636m	9.0 to 11.0m
Muelle de Guixar	457m	17.0m
Pantalan de Petroleros	100m	11.0m

There are facilities for general cargo, bulk, container, tanker, and passenger vessels. There are no restrictions for length or beam. Vessels up to 337m in length and 14.5m draft have been accommodated alongside.

In addition, there are several ro-ro berths, with depths of 8 to 10m alongside, and a marina.

Aspect.—The entrance fairways are indicated by lighted ranges and marked by lighted buoys which may best be seen on the chart.

Pilotage.—Pilotage is compulsory for all foreign vessels. Pilot can be contacted by VHF and generally board inside of Islas Cies at the inner end of the main entrance channels.

Anchorage.—Anchorage can be taken, in depths of 10 to 20m, mud, anywhere in the inlet between the port area and the N shore. Vessels working cargo frequently anchor, in depths of 16 to 19m, about 0.3 mile N of Muelle Transversal.

Caution.—Several submarine cables extend from the shore in the vicinity Punta del Molino and may best be seen on the chart.

Construction is being carried out at the W end of the port. Numerous shellfish bed areas lie within the inlet.

5.30 The Ria de Vigo—Head.—Ensenada de San Simon (42°19'N., 8°38'W.) is an extensive and shallow bay lying at the head of the Ria de Vigo. It is entered through Estrecho de Rande, a narrow strait, which lies between Punta Bestia, on the N side, and Punta de Rande, on the S side. A suspension bridge spans this strait and has a navigable width of 390m between its

supporting pillars. Depths through the strait are deep and clear, but shoal rapidly within the bay.

An ore berth (Rande Terminal) is situated on the S side of the strait, about 0.3 mile E of the bridge. It consists of an L-shaped jetty, 150m long, with a depth of 11m alongside.

Monte Faro Domayo, 615m high, stands 2.5 miles NW of Punta Bestia and is the highest land on the Peninsula del Morrazo. When viewed from the SW, it appears to have a conical summit, nearly isolated from the other peaks; however, when seen from NW, it appears to have a more level top and is not easily identified.

Monte de Nuestra Senora de La Peneda, 318m high, stands 4 miles NE of Punta de Rande. It has a conspicuous chapel, surrounded by trees, situated on the pointed summit.

There are depths of 1.8 to 5.5m within Ensenada de San Simon to the E of the strait. The depths then decrease to drying flats in its N part. The Rio de Redondela flows into the SE corner of the bay and the Rio Oitaben flows into its NE part. Both of these rivers are navigable by boats at HW. A group of islets, of which Isla de San Simon is the largest, lies close off the E shore of the bay.

The Ria de Vigo to the Rio Mino

5.31 Punta Orelluda (42°01'N., 8°53'W.), located 5.2 miles S of Cabo Silleiro, is a small projection with several rocks lying off it. Bajo Orelluda, with a least depth of 22m, lies 1 mile W of the point. Bajo de Oya, with a least depth of 20m, and Placer d'os Frades, with a least depth of 33m, lie 1.8 and 2.7 miles SSW, respectively, of the point. During heavy weather, the sea breaks over all these dangers and vessels should pass well to the W of them.

Inland, along this part of the coast, the shore is backed by a lofty and rugged range, which extends from Cabo Silleiro to Puerto de La Guardia, at the foot of Monte Santa Tecla.

Puerto de La Guardia (41°54'N., 8°52'W.), situated 7.5 miles S of Punta Orelluda, is a small harbor formed by a cove. It is protected by breakwaters and has depths of 7.6 to 9m. A conspicuous church stands in the village of La Guardia, at the head of the cove. The harbor is used by fishing vessels with local knowledge.

Bajo Lapo, a shoal with a depth of 11.5m, lies about 0.8 mile NW of the entrance to the cove; Bajo Arado, a shoal with a least depth of 21.5m, lies 0.7 mile W of Bajo Lapo. During heavy weather, both of these dangers break. Las Mamas, La Guardia, at the head of the cove. A lighted range indicates the entrance channel leading to the harbor, which is used by fishing vessels with local knowledge. with a least depth of 8.2m, lies 0.5 mile W of the entrance to the cove.

Two detached banks lie off the coast NW and SW of Puerto de La Guardia. The N bank, with a depth of 13m, lies about 2.2 miles NW of the cove and the S bank, with a depth of 14m, lies about 1.8 miles SW of the cove.

Monte de Santa Tecla (41°53'N., 8°52'W.), a conspicuous mountain with two peaks, stands close S of Puerto de La Guardia. Picacho de San Francisco, the S and highest peak, rises to a height of 350m. A stone pyramid, surmounted by a cross, and a radio mast stand on the summit of the N peak; a chapel stands on the S slope of the mountain. A factory building and two conspicuous chimneys stand at the SW foot.

The **Rio Mino** (Rio Minho) (41°52'N., 8°52'W.) is entered between Punta de Los Picos, which is the S termination of the slopes of Monte de Santa Tecla, and Ponta Ruiva, 0.8 mile S. It rises in the NE part of the province of Galicia and flows S to the border of Portugal, where it turns W. The river then flows for a distance of 130 miles, forming the boundary between Spain and Portugal.

Ilha Insua, a low islet surmounted by a fort, lies in the middle of the entrance. A light is shown from a structure standing on the fort. Entrance channels lie on both sides of this islet. The N channel is wider, but the S channel is reported to be the only one used as it is deeper. The bars, at the entrance of both channels, break with any swell and the depths, together with the shoals and rocks which encumber both channels, are subject to change. The river is navigable at HW by small craft, with drafts up to 2m, as far as Valena do Minho, 15 miles above the entrance. However, its course is interrupted by numerous small islands and sandbanks. A conspicuous hotel stands at the N side of the entrance to the river, close E of Pico de Los Picos. Camposancos and Caminha are small towns situated on the NW and SE banks of the river, respectively, 1.5 miles above the mouth. They are both fronted by small harbors and used by small craft and fishing vessels.

The tidal currents, over the bar and within the river, generally attain rates of about 3 knots, but during freshets, the ebb current may attain rates of 4 to 5 knots. Local knowledge is required for entering and local pilots are available.

The Rio Mino to Porto de Leixoes

5.32 The Rio Ancora (41°49'N., 8°52'W.) flows into the sea 3 miles S of the mouth of the Rio Mino. The coast between is fringed by foul ground extending 0.3 to 0.5 offshore. Monte Cobertorinho, 221m high, stands near the coast, 1.5 miles S of the entrance to the Rio Mino. A prominent pyramid is situated on its bare summit and a hermitage stands near the W side of its foot.

Ancora, a small drying harbor, lies on the N bank of the Rio Ancora, close inside the entrance. It is protected by breakwaters and only used by fishing vessels. Temporary anchorage can be taken, in a depth of 18m, sand, about 0.8 mile WSW of the harbor.

Montedor (41°45'N., 8°52'W.), a small headland, is located 3.7 miles S of the mouth of the Rio Ancora and rises steeply from the sea. A main light is shown from a prominent tower, with a dwelling, 28m high, standing on this headland. A radio-beacon is situated at the light.



Montedor Light

A pine forest is situated close N of the headland and several buildings and a prominent mill stand close S of it. Between this headland and the mouth of the Rio Lima, 4.5 miles SSE, the coast is low and backed, a short distance inland, by Serra de Santa Luzia. This mountain, 550m high, has a conspicuous bare summit, but it is frequently obscured by clouds.

Sumalha, a detached bank with a least depth of 20m, lies 4.2 miles SW of Montedor.

Serra d'Arga, 814m high, is a high tableland which terminates to the S in a steep slope, 8.5 miles ENE of Montedor. It is visible for a considerable distance.

A large sanitarium building stands near the coast, 1 mile S of the mouth of the Rio Ancora and is conspicuous. A prominent church stands in the village of Afife, 1.2 miles SSE of the sanitarium. Anchorage can be taken W of this village on sandy bottom, but vessels should not approach the coast within depths of less than 20m.

Feiteira, a rock with a depth of 5m, lies 1.3 miles SW of the mouth of the Rio Ancora. O'Boi, a rock with a depth of 4.9m, lies about 0.2 mile W of Montedor.

5.33 Porto de Viana do Castelo (41°41'N., 8°50'W.) (World Port Index No. 37940), a small port, lies close within the mouth of the Rio Lima, 4 miles SSE of Montedor.

Tides—Currents.—Tides rise about 3.5m at springs and 2.7m at neaps.

In the entrance, the flood tidal current generally attains a rate of 2 knots and the ebb current 3 knots. During floods, the ebb current may attain a rate up to 6 knots.

Depths—Limitations.—There are depths of 7.6m at springs and 6.5m at neaps over the bar at the entrance.

A channel, with a dredged depth of 3.5m, leads to a basin on the N side of the river. This basin has a depth of 4.2m and is used by fishing vessels. Several repair yards and drydocks are situated close N of it.

A channel, with a dredged depth of 6.5m, leads to a new commercial quay on the S side of the river. This quay has 475m of berthage, with a depth of 8m alongside, and a ro-ro berth at the W end. Generally, vessels up to 130m in length and 6.5m draft can be accommodated. Vessels up to 160m in length and 7.6m draft may enter at HW with special permission.

Aspect.—The Rio Lima enters the sea between Castelo de Santiago, on the N side, and Ponta Cabedelo, on the S side. The harbor entrance is formed between breakwaters which extend 1,000m SSE from the vicinity of Castelo de Santiago and 650m SW and SSW from Ponta Cabedelo. The town extends along the N bank of the river and is fronted by a training wall. It stands partly on level ground and partly on the hillside. A prominent hotel stands on the crest of a hill, 1 mile N of Castelo de Santiago. A large church stands close S of the hotel and at a somewhat lower elevation. The small town of Anha, visible from seaward, is situated on the S slope of a prominent dark hill standing 2 miles ESE of Ponta Cabedelo. The river is spanned by a bridge, 1.5 miles above the harbor.

A lighted range indicates the entrance channel; the fairway is marked by buoys.

Pilotage.—Pilotage is compulsory. Vessels should send an ETA at least 24 hours in advance, with a confirmation 6 hours before arrival. Pilots may be contacted on VHF channel 14 or

16 and generally board about 1 mile SSW of the head of the N breakwater.

Anchorage.—Anchorage may be obtained, in a depth of about 20m, W of the harbor entrance. The best berths are about 1.4 miles WSW, 1.2 miles SW, and 0.8 mile SSW of the head of the N breakwater. The pilot station should be contacted for advice before anchoring off the port.

5.34 The coast between Ponta Cabedelo and the entrance to the Rio Cavado, 9 miles S, is low and sandy with high land in the interior. The Rio Neiva, one of many small rivers encountered along this part of coast, enters the sea midway along this section. Drying sandbanks obstruct its entrance.

There are numerous villages and prominent peaks along this stretch of coast. A prominent hill, 190m high, stands 1.2 miles NE of the mouth of the Rio Neiva. Another prominent hill, 254m high and covered with vegetation, stands 2.5 miles SSE of the mouth of the same river. A village, with a prominent church, stands at the foot of this hill, on the W side. The villages of Marinhos and Albeheira stand close together at the foot of a precipice, 1.3 miles N of the mouth of the Rio Cavado. A mountain, 481m high, stands 5.8 miles NE of the mouth of the Rio Cavado and has a prominent isolated summit. Another mountain, 414m high, stands 1.5 miles S of this isolated summit and has a dark-colored conical summit.

Baixo da Eira, with a least depth of 1.8m, and Baixo de San Bartolomeu, awash, are shoals which lie 1 mile offshore, 4 miles and 7 miles S, respectively, of Ponta Cabedelo.

Parcel, with a depth of 13m, and Moiteira, with a depth of 19.5m, lie 4.5 and 5.3 miles SSW, respectively, of Ponta Cabedelo. The sea occasionally breaks over these shoals.

Caution.—In thick weather, this stretch of coast should not be approached within 5 miles and in no case approached within depths of less than 20m.

5.35 The **Rio Cavado** (41°32'N., 8°47'W.) rises in Sierra de Jerez, about 65 miles inland and is navigable by shallow craft up to 3 miles above the entrance. The entrance bar is reported to have silted up and has depths of less than 1m. It is fronted by a several rocks which lie 0.3 mile W of the mouth. The town of Esposende, fronted by a small drying harbor, stands 0.7 mile within the entrance. The harbor is used by fishing boats and pleasure craft, although it has been reported (1996) closed due to silting. The small town of Fao stands on the SW bank, 1 mile farther upriver.

Banco da Foz, Cavalos, Roncador, and Calas are shoal banks which lie up to 1.2 miles offshore in the approaches to the Rio Cavado. The sea breaks heavily over these dangers in bad weather. Shallow channels cross these banks and are used by small craft with local knowledge.

Monte Faro, 183m high, stands 1.8 miles E of the mouth of the Rio Cavado. This bare peak is easily identified as it is the southernmost summit of a ridge of hills and has a steep slope.

A main light (Esposende) is shown from a prominent tower with a dwelling, 15m high, standing on the old fort at the N entrance point of the river.

Caution.—A vessel navigating in this vicinity should give the coast a berth of not less than 3 miles and not approach within depths of less than 50m.



Esposende Light

5.36 Ofir (41°31'N., 8°47'W.), a resort village, is situated 1 mile S of the mouth of the Rio Cavado and has a landing place for boats. Three conspicuous tower-blocks, thirteen stories high, stand at this village and can be seen from offshore.

The coast between Ofir and the Rio Ave, 12 miles S, is low and consists of sandy beaches with some rocks. Apulia, a resort, is situated near the coast, 2.5 miles S of Ofir. A church and a group of windmills stand in the resort and several radio masts, 25m high, are situated 1.5 miles ESE of it.

Serra da Franqueira (41°30'N., 8°39'W.), a mountain range, lies parallel to the coast in this vicinity. Its highest summit rises to a height of 296m, 6 miles E of Apulia. Several buildings stand on this summit.

Monte San Felix (41°26'N., 8°43'W.), 200m high, stands 4 miles SE of Apulia. This prominent isolated peak is rounded and covered with trees. Several windmills stand on its summit and an isolated, high church tower stands halfway up the W slope.

Ponta Carreiros is located 4.2 miles S of Apulia and the village of A-ver-o-Mar, with a conspicuous church, is situated close S of it. Numerous windmills and churches stand along this section of the coast. The town of Amorim, situated 2 miles ESE of Ponta Carreiros, is prominent from seaward.

5.37 Porto de Povia de Varzim (41°23'N., 8°46'W.), a resort town and fishing center, is situated 2.5 miles S of Ponta Carreiros. It is fronted by a small harbor formed by two breakwaters. There are depths of 6m in the entrance and 4m in the harbor basin, which is mostly used by local fishing vessels and pleasure craft. Temporary anchorage can be taken, in depths of 10 to 30m, off the entrance to the harbor.

Forcada da Vila, a prominent above-water rock, is one of a group which lies about 1.2 miles S of the harbor.

A main light (Regufe) is shown from a tower, 22m high, standing 0.5 mile SE of the harbor.

Caution.—Vessels without local knowledge navigating in this vicinity should give this stretch of coast a berth of over 2 miles and should stay in depths of at least 40m.

5.38 The Rio Ave (41°20'N., 8°45'W.) flows into the sea 2.5 miles S of Povia de Varzim. The river entrance is obstructed by rocks and a drying sandbank, but the entrance channel usually has a depth of 2m and 0.6m over the bar. A prominent fort stands on the NW entrance point; a church stands on the SE side of the river.

Vila do Conde, a resort village, stands on the N bank of the river, 0.7 mile above the mouth, and a large convent stands on a hill, close NE of it. Both the convent and the ruins of an old aqueduct, which lies parallel to the coast, are prominent from seaward. A small town, with a prominent church, stands on the S side of the river, 1 mile above the mouth. A bridge spans the river near this town.

Vila do Conde is fronted by a small harbor. It is protected by breakwaters, which extend from the entrance points of the river, and is used by local fishing vessels and pleasure craft.

The coast between the Rio Ave and Ponta Boa Nova, 8.5 miles S, is backed by low land which extends inland to Serra de Santa Eufemia. This mountain range has three peaks. The central peak, 236m high, stands 5.5 miles SE of the entrance to the Rio Ave and is surmounted by a prominent hermitage. Monte Santa Gens, 135m high, stand 7 miles S of Serra de Santa Eufemia. This peak is very prominent, especially from SW, when the sun shines on the clay deposits situated on its slopes.

Between the Rio Ave and the resort village of Gafa, 1.8 miles S, the coast consists of a sandy beach. Guilhada, an above-water rock, lies about 0.3 mile offshore WSW of Gafa. The prominent hermitage of Santa Paio stands on the coast 1.8 miles S of Gafa.

In good weather, temporary anchorage can be taken, in a depth of about 20m, anywhere off this section of coast and about 1 mile offshore.

Ponta Boa Nova (41°12'N., 8°43'W.), rocky and salient, is located 7 miles S of the village of Gafa. A conspicuous oil refinery complex stands on the point and includes several chimneys, 100m high with flares.



Leca Light

A main light (Leca) is shown from a prominent tower with dwellings, 46m high, standing on the S part of Bonta Boa Nova.

A high obelisk, which has the appearance of a chimney from seaward, stands 1.5 miles N of the point. An aeronautical light is shown at an airfield situated 2.7 miles NE of the point.

Leixos Ocean Terminal (41°12'N., 8°45'W.) consists of an SBM connected to the shore by a submarine pipeline extending 1.5 miles ENE from the buoy to a point on shore about 0.4 mile N of Leca de Plameira Light. Entry is prohibited into the area with a radius of 1,000m centered on the SBM.

Porto de Leixoes (41°11'N., 8°42'W.)

World Port Index No. 37950

5.39 Porto de Leixoes, a small port protected by breakwaters, lies 1.5 miles SSE of Ponta Boa Nova. It is bounded on the N side by the town of Leca da Palmeira and on the S side by the town of Matosinhos.

Tides—Currents.—Tides rise 3.5m at springs and 2.7m at neaps.

Depths—Limitations.—The outer basin includes three tanker and LPG berths which are situated on the inner side of the NW breakwater. The inner basin is entered through a passage which is 58m wide and spanned by a bridge. There are facilities for general cargo, ro-ro, container, and passenger vessels. Generally, vessels up to 210m in length and 9.5m draft can be accommodated.

Vessels with a draft greater than 9m must wait for high tide.

Berth information is given in the accompanying table.

Leixoes—Berth Information			
Berth	Length	Depth	Remarks
Tanker A	—	14m	Can accommodate vessels up to 100,000 dwt
Tanker B	—	10m	Can accommodate vessels up to 27,000 dwt
Tanker C	—	6m	Can accommodate vessels up to 5,000 dwt
Dock 1 North	455m	9m	
Dock 1 South	520m	9m	
Dock 2 North	670m	10m	
Dock 2 South	690m	10m	
Dock 4 North	400m	11m	
Dock 4 South	440m	10m	
Container North	360m	10m	Can accommodate vessels up to 25,000 dwt
Container South	440m	11m	Can accommodate vessels up to 25,000 dwt
CNO	510m	4m	
PC1	567m	4m	
PC2	655m	4m	
PC3	667m	4m	

Aspect.—The harbor consists of two tidal basins protected by two breakwaters. The NW breakwater extends 750m SW and then 1,300m SSE from the shore at Leca da Palmeira. The

SE breakwater extends 600m SW and then 350m NW from the shore at Matosinhos.

Castelo do Queijo, an old fort, stands on a small promontory, 0.9 mile ESE of the head of the NW breakwater and is fronted by a stranded wreck; this wreck has been reported (1992) to have been removed. A group of oil tanks stands at a terminal midway along the NW breakwater.

Pilotage.—Pilotage is compulsory. Vessels should send an ETA at least 24 hours in advance, with amendments sent up to 1 hour before arrival. Pilots can be contacted on VHF channel 14 and generally board 0.8 mile S of the entrance.

The port maintains radar surveillance of the approaches and all vessels should report by VHF at a distance of 2 miles from the harbor if approaching from the S or W, and 3 miles if approaching from the N. Pilots are also available here for the Rio Douro and Oporto.

Regulations.—Vessels approaching the port must give the outer side of the NW breakwater a berth of at least 1 mile.

Vessels must not exceed a speed of 5 knots when entering.

Anchorage.—Vessels may anchor in depths of more than 20m, mud and sand, off the port and outside of the prohibited area. However, with strong W winds, anchorage outside is not practicable. Vessels less than 85m in length, with drafts less than 5m, may anchor in depths of 6 to 7m, about 0.4 mile E of the head of the NW breakwater and NE of the prohibited area limit.

Caution.—Several wrecks lie in the approaches to the port and may best be seen on the chart.

An isolated shoal, with a depth of 8.1m, lies about 0.4 mile NW of the head of the NW breakwater.

A submarine pipeline crosses the entrance of the harbor and may be seen on the chart.

An anchorage prohibited area, the limits of which are shown on the chart, lies in the approaches to the port and extends up to 0.7 mile W and S of the head of the NW breakwater.

During W gales, a very heavy swell is raised in the approaches to the port. At such times, the visibility may be greatly reduced by driving spray which makes the port entrance difficult to identify.

Due to silting and development within the port, vessels are advised to contact the authorities for the latest information concerning the depths.

The Rio Douro

5.40 The **Rio Douro** (41°09'N., 8°40'W.) rises in Sierra de Urbion in Castile and crosses the most mountainous parts of Leon and Salamanca before it reaches the Portuguese frontier. It discharges into the sea near Oporto after traveling a distance of about 390 miles.

The river is navigable by barges and small craft from its entrance to Regua, about 50 miles upstream, and by boats to Barca d'Alva, 74 miles farther inland.

The mouth of the river can be identified for a considerable distance in clear weather. Any haziness prevalent at dawn is usually clear by about noon. The conspicuous gap formed by the river between Monte Rabida and Monte Cabadelo indicates the entrance from the W and the city of Oporto is usually visible from a distance up to 15 miles seaward in clear weather.

The approaches to the entrance of the river are obstructed by sandbanks and shoals, and the entrance channel is subject to frequent changes because of the strong currents. The entrance fairway, which leads between breakwaters, is indicated by a lighted range and marked by buoys.

Numerous buildings stand along the N bank of the river between the entrance and the city of Oporto. This bank is fronted by a continuous wall with several quays. The city of Vila Nova de Gaia, a wine center, is situated on the S bank of the river and is connected to Oporto by four bridges.

Tides—Currents.—Tides at the entrance rise 3.2m at springs and 2.5m at neaps.

Freshets frequently occur between November and May. At such times, the associated tidal currents may attain rates up to 7 knots, making entry into the river impossible. It is reported (1992) that, at exceptional periods, these freshets caused the river to rise by as much as 4m above HW and increased the rate of the tidal currents to 12 knots. However, the construction of an upriver dam has controlled these excessive rates.

The complete absence of any rise or fall of tide and the presence of tree branches in the river are good indications that a freshet is imminent, even though it may not occur for 2 days.

During the winter, a local phenomena known as Arrunhentas, occurs and consists of eddies caused by a flood undercurrent being experienced as the surface current ebbs in the river.

5.41 Oporto (41°09'N., 8°37'W.) (World Port Index No. 37960), an important commercial center, stands on the N bank of the Rio Douro, about 3 miles above the entrance. Vessels up to 100m in length and 5.3m draft have been accommodated in the port under favorable conditions; however, most cargo is now usually handled by lighters.

Note.—It was reported (1989) that the port was closed to commercial shipping. Dredging was being carried out in order to resume the use of the port facilities.

It has also been reported (1995) that vessels over 25m long or with a draft greater than 4.2m should not enter the port due to shoaling.

The Rio Douro to Aveiro

5.42 The coast between the Rio Douro and town of Espinho, 8.5 miles S, consists of a sandy beach backed by sand dunes. A number of prominent buildings and windmills, visible from seaward, stand near the coast W of the village of Valadares, 3.7 miles S of the Rio Douro. The hermitage of Senhor da Pedra, a conspicuous building with a dome, is situated near the coast, 1.5 miles farther S.

An outfall pipeline, marked at its seaward end by a lighted buoy, extends 1.1 miles W from the shore, 2 miles S of the Rio Douro.

Espinho, a small village, stands 8 miles S of the Rio Douro and can be identified by its prominent church which stands on high ground above the other buildings and factory chimneys.

A mountain range, which extends in a NW-SE direction, terminates in Monte San Pedro Velho, 18 miles ESE of Espinho. This peak, 1,083m high, is an excellent landmark on a clear day, but should not be confused with Pico de Caramulo,

standing 20 miles farther S. Another mountain range, 820m high, extends between the above range and the coast.

Mata de San Jacinto, a group of pine trees, extends along the coast from 1.5 to 2.7 miles N of Barra de Aveiro. These trees protect the entrance from drifting sand.

Caution.—At times, the mountains and certain parts of this section of coast may be very difficult to distinguish because of the heat haze and the sand raised by the wind. At such times, vessels approaching the shore should use caution and those without local knowledge should stay in depths of over 10m.

Numerous fish nets may be encountered along the shores of this section of coast.

It has been reported that sand banks, which break heavily, are continually forming and disappearing along the 20m curve between Espinho and Cabo Mondego (40°11'N., 8°54'W.). These are caused by the action of the winds and currents; vessels are advised to give this section of coast a berth of at least 3 to 4 miles.

Aveiro (40°39'N., 8°44'W.)

World Port Index No. 37970

5.43 Aveiro, a commercial port and fishing center, is situated in the Ria de Aveiro, a narrow lagoon of salt marshes and sand spits.

Tides—Currents.—Tides rise 3.2m at springs and 2.6m at neaps.

The tidal currents in the entrance attain rates of 4 to 6 knots at springs, but during heavy floods, the ebb currents may attain rates up to 8 knots.

Depths—Limitations.—The entrance bar has a charted depth of 4.5m. Within the bar, the fairway is clear of dangers and the depths increase to 10m in places and then decrease to 3.5m at the E end.

The main facilities include North Terminal Berth, 500m long, with a depth of 8m alongside, situated close within the entrance; South Terminal Berth, 400m long, with a depth of 5.5m alongside, situated 2 miles upriver; and three piers, with depths of 6m alongside, situated 1 mile above the entrance and used by coastal tankers. In addition, there are 250m of berthing space for fishing vessels.

There are facilities for general cargo, ro-ro, bulk, and container vessels. Generally, vessels up to 110m in length and 6m draft can be handled, depending upon the bar conditions. It was reported (1993) that a vessel of 130m in length and 6.5m draft had been accommodated in the port.

Aspect.—The narrow lagoon runs parallel to the coast for 26 miles and is separated from it by a narrow stretch of sand. The city of Aveiro stands on low ground, 4 miles above the entrance, and is not readily visible from seaward. The entrance to the lagoon is protected on both sides by breakwaters.

A main light is shown from a prominent tower, with a dwelling, 62m high, standing on the S side of the entrance. A prominent water tower stands 0.4 mile SE of the light. A conspicuous control tower, with a water tower close NE, stands at an air base, close N of the entrance.

A lighted range indicates the entrance channel between the breakwaters, but it is reported that the rear light is difficult to identify in daytime.



Aveiro Light

Pilotage.—Pilotage is compulsory for vessels of more than 200 grt. Vessels should send an ETA at least 3 hours in advance. Pilots can be contacted by VHF channel 14 or 16 and generally board about 1.5 miles W of the entrance.

Anchorage.—Good temporary anchorage can be taken, in depths of 12 to 20m, sand, about 1.5 miles NW of the head of the N breakwater. The N part of the anchorage is an explosives anchorage area.

Caution.—Fresh E and SE winds raise a heavy sea in the approaches. With strong winds from between SW and NW, the entrance should not be attempted.

The entrance bar is constantly shoaling and shifting and local knowledge is required.

Aveiro to Cabo Carvoeira

5.44 The coast between Aveiro and Cabo Mondego, 29 miles S, consists of a sandy beach and sparsely inhabited land. Farther inland, the terrain becomes mountainous.

Pico do Caramulo, 1,069m high and prominent, stands at the S end of Serra do Caramulo, 26 miles E of Aveiro. This peak can be seen on a clear day at a distances up to 20 miles. Pico do Bucaco, 547m high, stands 12.5 miles SW of Pico do Caramulo. Its lower slopes are thickly wooded on the N side and a village, which stands near the summit, is visible for a considerable distance seaward when the sun shines on it. Picos Cantaros, some of the highest peaks in Portugal, are part of the Serra da Estrela range and stand about 50 miles inland E of Pico de Bucaco. The highest of these peaks rises to a height of 1,993m and is visible from seaward on a clear day.

Cabo Mondego (40°11'N., 8°54'W.), rugged and fringed by several rocks, is the W extremity of the Serra de Buarcos range and should be given a berth of at least 1 mile. This range rises to a height of 251m, about 1.5 miles NNE of the cape, and several buildings stand on the summit. When viewed from a distance from the N or S, this cape appears as an island and should not be mistaken for Ilha Berlenga, located to the S. The sandy beach, which extends several miles N and S of the cape, serve to identify it.

A main light is shown from a tower with a dwelling, 15m high, standing on the cape.

Enseada de Buarcos, the roadstead for Porto de Figueira da Foz, lies between Cabo Mondego and Forte de Santa Catarina, 2.7 miles SE. The village of Buarcos is situated 1.8 miles SE of the cape and is fringed by drying reefs. During offshore winds, anchorage can be taken, in depths of 8 to 11m, off the village, taking care to avoid the fringing reefs. In good weather, vessels waiting to enter Porto da Figueira da Foz can anchor, in a depth of 14m, fine sand, W of Forte de Santa Catarina.

5.45 Porto da Figueira da Foz (40°09'N., 8°52'W.) (World Port Index No. 37980), a small commercial port, lies at the mouth of the Rio Mondego. This river is navigable by small craft as far as Foz do Dao, 53 miles above the entrance. The port is also a fishing center and has several shipyards for small vessels.

Tides—Currents.—Tides rise 3.4m at springs and 2.6m at neaps.

Depths—Limitations.—The entrance fairway inside the bar is 100m wide and has a dredged depth of 7m. Extensive facilities for fishing vessels and a marina are situated close inside the entrance. The commercial quay has 462m of berthing space, with a depth of alongside 4.5m.

Generally, vessels up to 90m in length and 4.3m draft can be accommodated in the port. Vessels up to 100m in length with a bow thruster can be handled.

Aspect.—Breakwaters extend from both entrance points of the river and provide protection. An entrance channel, lined by training walls, leads between them into the harbor. It is indicated by a lighted range. A sand bar, which extends up to 0.5 mile W of the breakwaters, limits the size of vessel using the harbor. A conspicuous suspension bridge spans the river, 1.5 miles above the entrance. Forte de Santa Catarina stands on the rocky point which forms the N side of the entrance. A conspicuous high-rise building stands at the S side of the village of Buarcos, 1 mile N of the entrance.

Pilotage.—Pilotage is compulsory, but is available only during daylight hours. Vessels should sent an ETA at least 24 hours in advance and confirm the ETA 12 hours prior to arrival. Pilots can be contacted by VHF channel 14 or 16 and usually board about 0.2 mile W of the breakwater heads. Small craft must not impede the movement of larger vessels when boarding a pilot or entering the river.

Signals.—Bar signals are shown from a mast at the NE corner of Cachim Dock, as follows:

	Bar Closed	Bar Dangerous
By day	Black sphere at the top of the mast	Black sphere at the middle of the mast
By night	Three fixed lights—green, red, green—disposed vertically	Three flashing lights—green, red, green—disposed vertically

Anchorage.—Anchorage can be taken, in depths of 12 to 15m, about 1.2 miles W of the N breakwater head. For further information, see Enseada de Buarcos in paragraph 5.44.

Caution.—The entrance bar is subject to heavy silting; entry should not be attempted without local knowledge.

A sunken barge is reported to lie close off the W extremity of the S breakwater.

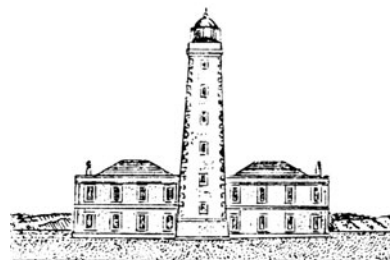
5.46 The coast between the Rio Mondego and Pontal da Nazare, 34 miles S, consists of a sandy beach, but rises to high terrain in the interior.

Between the Rio Mondego and the Rio Liz, 16.7 miles SSW, the coast is fronted by sand dunes backed by a pine forest. Several groups of fishermen's huts are situated along this section of coast and numerous windmills stand along the shore, about 4.5 miles S of the Rio Mondego. Several conspicuous chimneys are reported to stand 1.5 miles inland, about 5 miles S of the entrance to the Rio Mondego.

Between the Rio Liz and Penedo da Saudade, 7.5 miles SSW, the coast is backed by an extensive pine forest. The prominent chapel of San Pedro de Muel stands 0.5 mile S of Penedo da Saudade and the conspicuous hermitage of Senhora da Vitoria stands 3 miles farther S.

A main light is shown from a prominent light tower and dwelling, 32m high, standing at Penedo da Saudade.

During good weather, vessels can anchor, in a depth of 15m, anywhere off this section of coast and about 1.5 miles offshore. Small vessels can anchor, in depths of 12 to 13m, off the mouth of the Rio Liz.



Penedo da Saudade Light

Caution.—Care should be taken to avoid the fishing nets which are often laid up to 2 miles off this section of coast and up to 1.5 miles NW of Pontal da Nazare.

A shoal depth of 15m, whose existence is doubtful, is reported to lie about 20 miles NW of Penedo da Saudade and a depth of 49m is reported to lie 2.5 miles NE of it.

A dangerous wreck, whose position is doubtful, is reported to lie about 8 miles WSW of Pontal da Nazare.

Several ODAS lighted buoys may be moored off this stretch of coast.

5.47 Pontal da Nazare (39°36'N., 9°05'W.), the N entrance point of Enseada da Nazare, is the W extremity of a rocky headland. An ancient fort, a church, and a cluster of buildings stand on its summit, 111m high. A light is shown from a tower, 8m high, standing on the SW corner of the wall surrounding the ancient fort.

Monte de San Bartolomeu, 156m high, stands 1.7 miles ESE of Pontal da Nazare and is prominent. It is conical in shape and is surmounted by a conspicuous hermitage.

Enseada da Nazare, a small bay, is entered between Pontal da Nazare and the Rio Alcoa, 1 mile SSE. Its great depths

make it inconvenient as an anchorage, but small craft may anchor close offshore sheltered from NW winds.

Nazare, a small harbor, is situated on the S side of the bay and is protected by breakwaters. It has depths up to 5.5m and is used by fishing vessels up to 15m long.

Caution.—The section of coast between Pontal de Nazaire and Baie de Cascais, about 55 miles S, is subject to intense fog from early morning until noon, especially in summer.

5.48 Ponta do Facho (39°31'N., 9°09'W.) is located 5 miles SSW of Nazare. The coast between is low and is mostly backed by sand dunes. The point rises to a detached conical hill, 96m high, which is surmounted by a prominent pyramid.

Sao Martinho do Porto, a circular lagoon, is entered between Ponta de Santo Antonio, located 0.5 mile S of Ponta do Facho, and Ponta Santana, 200m SW. A light is shown from the S side of Ponta de Santo Antonio. This lagoon is of little importance to navigation as it is shallow and can only be entered by small craft and fishing boats with local knowledge. Vessels can anchor, in a depth of 20m, sand, about 1 mile off the entrance.

The coast between the lagoon and the prominent village of Foz do Arelho, 6 miles SW, is high and rugged. It rises steeply to Serra do Bouro, a flat-topped ridge, which extends 5 miles SW.

Serra dos Candeirios, a prominent mountain range with seven peaks, lies parallel to the coast, 11 miles inland. Vale Grande, 611m high, stands 13 miles ENE of the entrance to Sao Martinho do Porto and is the highest of these peaks.

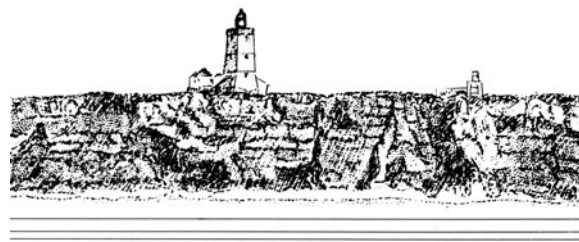
Lagoa de Obidos, a lagoon, lies close SW of Foz do Arelho. It is entered through a narrow outlet which frequently silts up during the summer months.

Ilheu de Fora, located 6 miles SW of the lagoon, is the outermost of a chain of rocky islets which extend 0.8 mile N from the shore.

Cabo Carvoeiro (39°21'N., 9°24'W.), the W extremity of the Peninsula de Peniche, is located 3.5 miles WSW of Ilheu de Fora. The peninsula consists of a steep and rocky headland which is joined to the coast by a low and sandy isthmus. When viewed from the N or S, it appears as an island.

A main light is shown from a prominent tower, with a dwelling, 27m high, standing on the cape.

Ponta da Papoa, the N extremity of the peninsula, has a conspicuous islet lying close NE of it and a small cove lying W of it. A line of prominent fortifications extends along the E face of the peninsula. Peniche de Cima, the upper town, and Peniche de Baixo, the lower town with the citadel near it, are situated within these fortifications.



Cabo Carvoeiro Light

Rocky shoals, with depths of 19.9m and 18m, has been reported to lie 3.8 miles W and 1.2 miles N, respectively, of Cabo Carvoeiro.

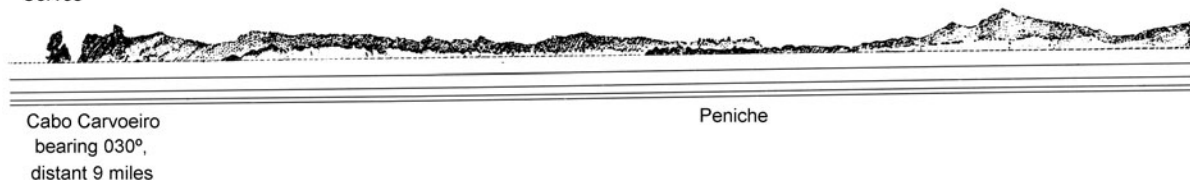
Enseada de Peniche de Cima, a small bay, lies on the N side of the Peninsula de Peniche and is entered between Ponta da Papoa and Ilheu de Fora. Anchorage can be taken, in a depth of 12m, sand and very hard clay, in the central part of this bay. The holding ground is poor and the anchorage is exposed to N and NW winds. A conspicuous hotel is reported to stand near the head of the bay. Anchorage can also be taken, in depths of 11 to 13m, rocky bottom, on the S side of the peninsula, about 0.3 mile offshore. Porto de Peniche, a small harbor, lies at the head of a small bay on the S side of the peninsula and is protected by breakwaters. It has depths of 2 to 3m and is used by fishing vessels and pleasure craft.

5.49 Os Farilhoes (39°29'N., 9°32'W.) consists of a group of steep and rocky islets fringed by shoals. Farilhao Grande, the largest islet, is 96m high and lies 9.5 miles NW of Cabo Carvoeiro. A light is shown from a tower, 6m high, standing on this islet. Fishing vessels are reported to obtain shelter from winds between the W and NE within the small channels lying between the islets.

A depth of 22m was reported (1972) to lie 1.7 miles WSW of Farilhao Grande. Serro do Nordeste, a shoal bank with a least depth of 13.8m, lies 0.8 mile ENE of Farilhao Grande. The sea breaks heavily at times on this bank and also between it and the islets.

Ilha Berlenga (39°25'N., 9°30'W.), 92m high, lies 5.5 miles WNW of Cabo Carvoeiro and is fringed by rocks. The island has a flat summit and its sides are steep and greatly indented. It is almost divided into two parts by two narrow inlets which are located on opposite sides of the island and separated by a small isthmus. The SW and largest part of the island is known as Ilha Berlenga; the NE part of the island is known as Ilha Velha.

Nau dos
Corvos



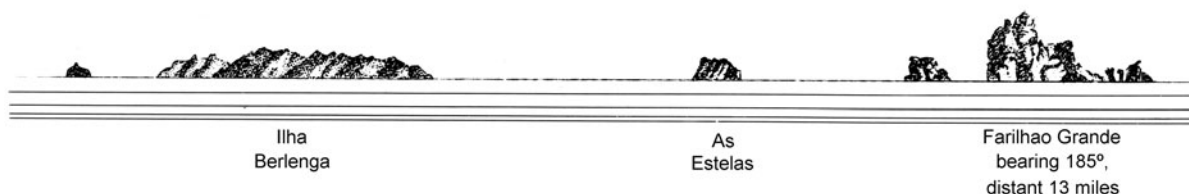
Cabo Carvoeiro
bearing 030°,
distant 9 miles

Peniche

The Peninsula de Peniche from SSW



Os Farilhoes, Ilha Berlenga, and the Peninsula de Peniche from S



Ilha Berlenga and Os Farilhoes from N

Carreiro dos Cacoës, the inlet on the N side of the island, is bordered by almost vertical cliffs with a beach at its head. It has depths of 9m in the entrance and 5.5m closer inshore. During W gales, the sea breaks violently against the beach. Carreiro do Mosteiro, the inlet on the S side of the island, has depths of 14m in the entrance and 4m closer inshore.

A main light is shown from a prominent tower, with a dwelling, 29m high, standing on the summit of Ilha Berlenga. Forte de Sao Joao Batista, a small and prominent fort, stands on a rocky outcrop, 0.3 mile S of the light.



Ilha Berlenga Light

Las Estelas, a group of islets and rocks, and Serro da Velha, a high rock, lie 1 mile NW and close NE, respectively, of the island. Baixa das Altafanas, a rocky shoal, lies about 0.5 mile SW of Ilha Berlenga. It has a least depth of 14.2m and breaks in heavy weather.

During winds from between the SW and NNW, anchorage can be taken, in about 20m, sandy bottom, off the SE side of Ilha Berlenga.

The channel between Os Farilhoes and Las Estelas is deep and clear, but a strong current sets from the former to the latter and great caution is necessary when navigating through it. The channel between Ilha Berlenga and Cabo Carvoeiro is deep and

clear; it can be navigated at any time during clear weather. When navigating off this part of the coast in thick weather, vessels should use caution in order to avoid running onto these islets. They lie well offshore and the depths in their vicinity are great and irregular and give no warning of a near approach.

Regulations.—An IMO-adopted Traffic Separation Scheme is situated up to 20 miles W of Ilha Berlenga and can best be seen on the chart.

Cabo Carvoeiro to the Rio Tejo

5.50 The coast between Cabo Carvoeiro and Cabo da Roca, 35 miles S, consists of sandy beaches for the first few miles, but then it becomes higher with steep, rocky cliffs.

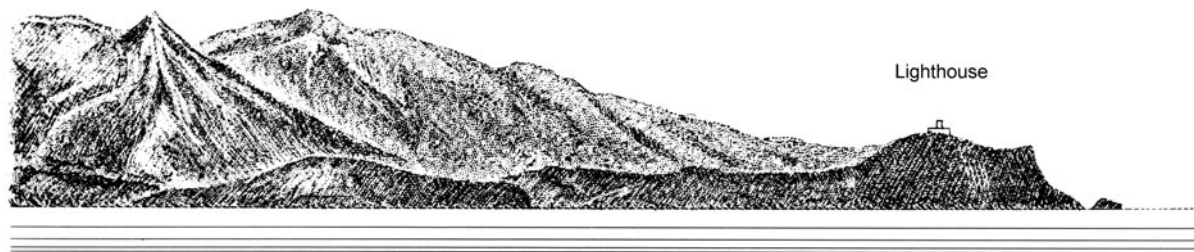
Praia da Areia Branca, a stretch of beach, fringes the coast between 5.5 and 7.8 miles SSE of Cabo Carvoeiro. Porto Dinheiro and Porto Novo, boat landing places, are situated 1.7 and 3.8 miles S, respectively, of its S end. The Rio Alcabrichelle flows into the sea at Porto Novo and a prominent hill, 108m high, stands 0.8 mile SE of its mouth. A conspicuous hotel stands on the N side of the river entrance.

The prominent village of Moinho de Pavia stands on a hill, 2.3 miles S of Porto Novo; a conspicuous convent is situated close E of it. A prominent yellow building, in the shape of a turret, stands on the beach, 3 miles S of Porto Novo.

Ponta da Lamparoeira (39°04'N., 9°25'W.), a prominent point, is located between two beaches, 17 miles SSW of Cabo Carvoeiro. A stranded wreck lies close off this point. Two conspicuous high-rise buildings are reported to stand near Santa Cruz, 3.8 miles NNE of the point. A prominent hill, surmounted by a pyramid, is situated 1 mile S of Santa Cruz.

A submerged well has been reported to lie about 8.5 miles W of Ponta Lamparoeira.

Inland, a mountain range backs the coast. Monte Junto, 666m high, stands at the NE end of this range, 14 miles E of Porto Novo, and is very conspicuous. The range is visible for a considerable distance on a clear day and is easily distinguished because of its rounded outline and dark color.



Cabo da Roca from N, distant 10 miles

The coast between Ponta da Lamparoeira and Ponta da Ericeira, 6.8 miles S, consists of cliffs fringed by a narrow beach. Portinho das Barcas, a landing place, lies 1 mile S of Ponta da Lamparoeira and the village of Barril stands on the S slope of a hill, 1 mile E of it. A conspicuous water tower stands 1.3 miles SE of Portinho das Barcas.

Ponta da Ericeira ($38^{\circ}58'N.$, $9^{\circ}25'W.$), steep and salient, is marked by a fort and a small town surmounting the cliffs which form the point. The town is fronted by a shallow harbor, protected by a breakwater, which is used by fishing boats.

The coast between Ericeira and Cabo da Roca, 11.5 miles SSW, is composed of cliffs intersected by ravines. Forte de Santa Maria stands on a cliff, 6 miles S of Ponta da Ericeira and a prominent watch tower stands on a hill, 0.5 mile SSE of it.

Mafra Palace ($38^{\circ}56'N.$, $9^{\circ}20'W.$), a conspicuous white marble building, stands on a hill 4.5 miles ESE of Ericeira. This structure, which is 235m long across its face, consists of the palace, a church, and a convent. It is easily identified because no other building like it stands on the Portuguese coast.

5.51 Cabo da Roca ($38^{\circ}47'N.$, $9^{\circ}29'W.$) is the W point of Portugal and the continent of Europe. It consists of steep and rocky cliffs, 168m high, fringed by above-water rocks. A main light is shown from a prominent tower with a dwelling, 22m high, standing on the cape. A prominent pillar, surmounted by a white cross, stands on a cliff, close SW of the light.

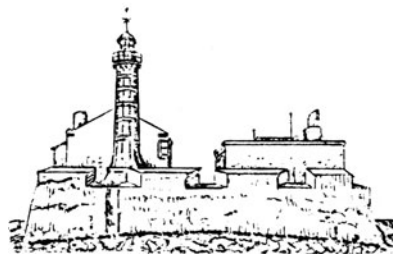
Pedra d'Arca (Broeiro), with a depth of 0.9m, lies at the extremity of foul ground, 0.5 mile W of the cape.

During N and NW winds, a current generally sets S past the cape and attains a rate up to 1 knot.

A prominent rocky range, with a serrated crest and numerous peaks, extends ENE for 5 miles from a position close E of Cabo da Roca. Pena, one of the most prominent peaks, stands near the E end of the range and has a palace, from which a light is exhibited, situated on its summit. Cruz Alta, the highest peak of the range, stands 0.5 mile S of Pena. Monje, 489m high, stands 2.5 miles WSW of Pena and has a beacon on its summit. Numerous villages, which are situated on the N slopes of this range, can be seen from seaward.

Regulations.—An IMO-adopted Traffic Separation Scheme, the limits of which are shown on the chart, lies up to 21 miles W of Cape da Roca. For further details, see Pub. 140, Sailing Direction (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

5.52 Cabo Raso ($38^{\circ}43'N.$, $9^{\circ}29'W.$), low and rocky, is located 4.5 miles S of Cabo da Roca and fringed by rocks. Forte de Sao Braz is situated on the cape. A main light is shown from a prominent tower, 13m high, standing on the fort. Praia do Guincho, a bright expanse of sand rising higher than usual, lies 1.5 miles N of the cape and is prominent from seaward.



Cabo Raso Light

Vessels should give this cape a berth of at least 0.5 mile in order to clear the breaking reefs which border it.

Caution.—Local magnetic anomalies have been observed in a position about 4 miles SE of Cabo Raso.

Submarines, both surfaced and submerged, are reported to exer-cise off the coast between Cabo Carvoeiro and Cabo Espichel.

Numerous fishing vessels may be encountered in the vicinity of Cabo Carvoeiro.

Approaches to the Rio Tejo (River Tagus)

5.53 The Rio Tejo (River Tagus) ($38^{\circ}40'N.$, $9^{\circ}18'W.$) is approached between Cabo Raso and Cabo Espichel, 21.5 miles SE. It is entered between Ponta da Laje, on the NW side, and Bico da Calha, on the SE side. The city of Lisboa stands on the N bank of the river 7 miles E of the entrance.

The Rio Tejo has its origin in Sierra de Molino, near Alberacin in the Spanish province of Teruel. It flows in general W and SW directions and discharges above Lisboa into Mar da Palha, a large expanse of water, 12 miles long and from 2 to 7 miles wide. It then flows through a channel, 1 mile wide, and finally discharges into the sea. The river is about 480 miles long and is considered to be the longest river on the Iberian Peninsula. It is navigable by vessels of any class to a position above Lisboa, and by vessels of 50 grt to its junction with the Rio Zezere, about 65 miles above its entrance.

5.54 North side.—Between Cabo Raso and Ponta da Alpendurada, 2 miles ESE, the coast remains cliffy. The old signal tower situated near Oitavos, 1 mile ESE of Cabo Raso, is conspicuous to vessels rounding this cape. Guia Light is shown from a prominent tower, 28m high, standing on Ponta da Alpendurada.



Guia Light

Forte de Santa Marta stands on Ponta do Salmodo, 1.2 miles ESE of Guia Light. A light is shown from a tower, 20m high, standing on the fort.



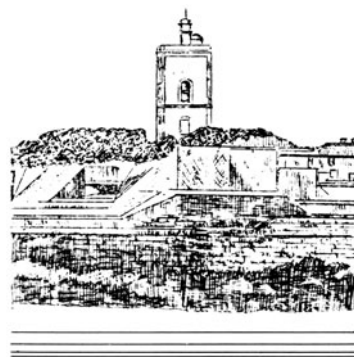
Santa Marta Light

Baia de Cascais (38°41'N., 9°24'W.) is entered between Ponta do Salmodo and Forte Santo Antonio da Barra, 1.8 miles ENE. Cidadela de Cascais, a walled citadel, stands on the W side of the bay with the town of Cascais close N of it. The town of Estoril, with its many high-rise buildings, lines the N shore. Navigation is prohibited within 100m of the breakwater due to a submerged breakwater that extends 60m to the S.

Ponta da Laje (38°40'N., 9°19'W.), the NW entrance point of the river, is located 4.5 miles ESE of Ponta do Salmodo. This point is high and rocky and Forte de Sao Juliao is situated on the cliffs above it. A light is shown from a prominent tower, 24m high, standing on the fort and a radio mast stands 0.3 mile NNE of it.

A conspicuous church stands at an elevation of 79m, 2 miles NNW of Ponta da Laje. A prominent sanitarium is situated close to the shore, 1.2 miles WNW of the same point.

Caution.—An anchorage prohibited area, the limits of which may best be seen on the chart, extends up to 2 miles offshore between Cabo Raso and Guia Light. Submarine pipelines extend up to 1.5 miles offshore in this vicinity.



Forte de Sao Juliao Light

Fishing nets are laid from March to November within 0.5 mile of the shore at several places along the coast in the approaches to the river.

5.55 South side.—**Cabo Espichel** (38°25'N., 9°13'W.), 150m high, is the W extremity of a steep, bold headland. The cape has a flat, white summit and its S side is reddish in color. A main light is shown from a prominent tower, 32m high, standing 0.3 E of the cape.



Cabo Espichel Light

A prominent convent stands on the summit of the headland and a conspicuous dome stands at an elevation of 112m, 8.5 miles NNE of the cape.

Baixa do Cabo, a detached rocky patch with a least depth of 6.9m, lies about 0.5 mile WNW of Cabo Espichel.

Between Cabo Espichel and Bico da Calha, 15.5 miles N, the coast is steep and rocky for about 3 miles, but then becomes low and sandy. A prominent stone survey marker stands on the coast, 2 miles N of Cabo Espichel Light. Costa de Caparica, a town with numerous high-rise buildings, is situated on the coast, 2.5 miles S of Bico da Calha. Chibata, a 112m high hill, stands 0.8 mile E of the town. An aeronautical radiobeacon is situated in the vicinity of this hill.

Bico da Calha (Ponta da Calha) (38°40'N., 9°15'W.), the SE entrance point of the river, is low and sandy. The land rises in ton escarpment, 80m high, about 1.5 miles E of the point.

Forte Bugio, a circular two-storied building, stands on the SE side of the entrance, 1.7 miles W of Bico da Calha. A light is shown from a tower, 14m high, standing at the center of the fort.

Caution.—The entrance to the river is obstructed by two extensive shoal banks, known as Cachopo Norte and Cachopo Sul. The former shoal bank extends up to 3.5 miles SW from Ponta da Laje and the latter shoal bank extends up to 3 miles SW from Bico da Calha. The outer ends of these shoal banks



Forte Bugio

are joined by a bar, about 2 miles wide, which has a least depth of 11m.

Lisboa (Lisbon) (38°42'N., 9°10'W.)

World Port Index No. 37990

5.56 Lisboa, the capital and principal port of Portugal, is situated on the N bank of the Rio Tejo, 7 miles E of the entrance. The city, which rises from the N bank of the river, is a dense mass of buildings occupying the S slope of a succession of hills.

Porto de Lisboa Home Page

<http://www.portodelisboa.com>

Winds—Weather

Fog is frequent in calm periods between October and February, forming in the early morning and generally dissipating during the afternoon.

Tides—Currents

Tides rise about 3.8m at springs and 3m at neaps.

In the middle of Barra Grande, the principal entrance channel, the tidal currents set directly along its axis. However, away from the middle of the channel, they set towards the shoal banks on either side.

During ordinary weather, the maximum rate of the flood current on the bar is 3 knots and the maximum rate of the ebb current is 4 knots. After heavy rains, the rate of the ebb current may increase up to 5 knots. The effect of the ebb current is

generally felt 2 to 3 miles seaward of the bar but during freshets, its influence is experienced much farther out.

When a strong ebb current is opposed by a gale from seaward, the sea breaks completely across the bar, so that these breakers cannot be distinguished from those on the shoal banks on either side.

Within the estuary, the flood current runs regularly and generally sets parallel to the shores. The ebb current is more rapid and at its commencement, the waters from Mar da Palha set N and follow the N bank, where eddies are formed. An eddy also sets in along the N bank during the last of the ebb. Tide rips often form E of Pontal de Cacilhas.

Off the city of Lisboa, the ebb current is very strong and, during freshets, may attain a rate of 6 to 7 knots. When these conditions prevail, the current is usually less strong on the S side of the river.

Depths—Limitations

The bar is never impassable even with SW gales, but at such times, heavy rollers break with great force across this channel. During W gales in the winter, or when the freshets are strong, such conditions may continue for several days.

Barra Grande (Barra Sul), the principal entrance channel, leads NE over the bar and between the shoal banks which extend from the entrance points of the river. It had a least reported depth of 11.9m on the alignment of the range line (1994), but lesser depths lie close adjacent. Within the bar, the depths increase rapidly to 18 to 22m.

Vessels with drafts of 11 to 13.7m may enter the port depending upon the sea state and the tide.

Barra Norte, a narrow channel, lies between Ponta da Laje and the N end of Cachopo Norte. It is used by small craft entering the river from the NW. This channel has a least charted



Trafaria (NATO) Fuel Pier

depth of 5.2m on the alignment of the range line (1990). Strong winds from S through SW to W cause a strong swell in the channel, especially during the ebb current, and using the channel at this time is not recommended. In reduced visibility, vessels with an loa greater than 12.2m and which are not radar-equipped are not allowed to use the channel.

There are about 7 miles of berthing space available alongside the numerous quays and basins which line the shore fronting the city of Lisboa. There is about 13,000m of total quayage, with depths of 4 to 13m, situated on the N bank of the river, and 3,000m of total quayage, with depths of 3 to 17m, situated on the S bank of the river. There are facilities for general cargo, ro-ro, container, tanker, LPG, and bulk vessels.

Doca de Pedrouc, entered close W of Torre de Belem, has 1,000m of total berthing space, with depths of 4 to 5.3m alongside, and is used by fishing vessels.

Cais de Alcantara, a container and general cargo terminal, is situated close E of the bridge on the N side of the river. It is 1,100m long and has depths of 10 to 13m alongside.

Doca de Alcantara, the principal basin of the port, is entered at the E end of Cais de Alcantara through a channel 35m wide; this channel is subject to heavy silting and its depths should be verified locally. It has 1,200m of total berthing space with depths of 6.5 to 8m alongside.

Cais da Rocha is situated at the E end of Cais de Alcantara. It is 450m long and has depths of 8 to 13m alongside.

Cais de Santos is situated on the N side of the entrance to Doca de Alcantara. It is 350m long and has a depth of 7m alongside.

Cais de Santa Apolonia, a container terminal, is situated 2.5 miles upstream of Doca de Alcantara. It is 870m long and has depths of 8 to 10m alongside.

Doca do Pocodo Bispa, situated 1 mile upstream of Cais de Santa Apolonia, is the site of a large grain terminal and has a depth of 7m alongside.

Canal de Cabo Ruivo leads up the W side of Mar da Palha to Ponte de Cabo Ruivo and Ponte da Matinha, where there are berths, with depths up to 11m alongside, which are used by tankers and LPG vessels up to 65,000 dwt.

Trafaria (NATO) Fuel Pier, situated close inside the river entrance on the S side of the river, consists of a T-head jetty with dolphins. It has a face, 100m long, with a depth of 9.8m alongside.

Trafaria Grain Terminal is situated close E of the fuel pier. Its main berth is 254m long with a depth of 17m alongside.

Palenca Bulk Terminal is situated at Tagol, close W of the bridge, and consists of two dolphin berths. The main berth has depths of 12 to 16m alongside and can handle vessels up to 90,000 dwt.

In addition, there are several tanker and LPG berths situated along the S side of the river with depths of 8.8 to 12m alongside.

Most of the other basins situated along the river are available only to yachts, small craft, and coastal vessels and, in many cases, they have depths much less than those found alongside the quays. The S shore of the river is subject to silting and the depths at the above mentioned berths may vary considerably.

The Lisnave Shipyard is situated at the E end of the port, on the S side of the river. It has several drydocks, the largest being 520m long and 90m wide with a depth of 12.3m. Vessels up to 1,000,000 dwt can be handled.

A tank cleaning and gas freeing facility, which is operated by the shipyard, has been constructed at Porto Brandao, 1.5 miles W of the bridge. The dolphin berth has a depth of 12m alongside and can accommodate tankers up to 600,000 dwt.



Ponte 25 de Abril

A naval base is situated close S of the shipyard. It is fronted by a basin which is entered through a channel dredged to a depth of 7.5m.

It was reported that the largest vessel to be accommodated in the port was 555,051 dwt and 414m in length, with a draft of 12.5m.

Aspect

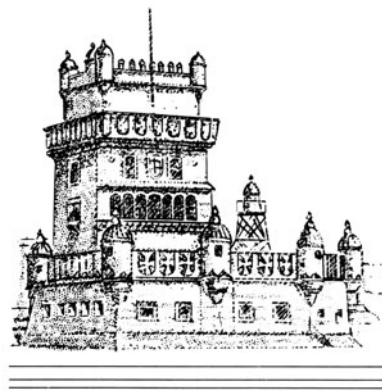
The entrance fairways are indicated by lighted ranges which may best be seen on the chart. The lighted ranges are continuously floodlit by red lights in order to render the range lights distinguishable from the lights of the city. The positions of the front light towers are indicated by red and yellow stripes painted on the river wall.

An outer lighted buoy marks the seaward approach to Barra Grande and is moored 5.2 miles SW of Forte de Sao Juliao.

On entering the river, the conspicuous Ponte 25 de Abril, a road suspension bridge, will be seen. This bridge crosses the river 7 miles E of Forte de Sao Juliao and is supported by two main pillars, each 190m high. It has a vertical clearance of 70m under the span between the pillars.

Within the river, conspicuous objects include a railway viaduct, which spans the mouth of the Rio da Laje, 0.7 mile NE of Ponta da Laje; five radio station towers, 114m high, standing 1 mile ENE of Esteiro Light; Torre de Belem, a two-story tower with a battery, 26m high, standing 2.5 miles E of Gibalta Light; a yellow stone monument standing near the shore, 0.5 mile ENE of Torre de Belem; Estrela, a church with two towers and a very conspicuous dome, standing 3 miles ENE of Torre de Belem; Castelo de Sao Jorge, situated on a hill, 1.2 miles E of Estrela; the observatory, a white building, standing N of Castelo de Sao Jorge; a number of large silos standing close S of

the grain berth at Trafaria; the Statue of Christ, 108m high, standing at an elevation of 222m, close E of the S end of the Ponte 25 de Abril bridge; and the tower of a church standing on a hill, 100m high, 0.5 mile ENE of the statue.



Torre de Belem

Ponte Vasco de Gama, completed in 1998, spans the Rio Tejo above Lisboa, between Olivais on the N bank and Samouco on the S bank.

Pilotage

Pilotage is compulsory inward of Baia de Cascais for the following vessels:

1. Vessels over 35,000 grt.
2. Vessels over 10.5m draft.
3. Towing vessels.



Ponte Vasco de Gama from N

4. LPG vessels.
5. Vessels with any malfunction.
6. Vessels specified by the port authority.
7. During bad visibility of 1 mile or less.

Pilotage is compulsory for other vessels inward of Torre de Belem (38°42'N., 9°13'W.), but may be arranged from Baia de Cascais.

Vessels should send an ETA message at least 4 hours in advance. Pilots can be contacted by VHF channel 14 or 16 and generally board in Baia de Cascais, 1 mile SE of Forte de Santa Marta, or 0.3 mile S of Torre de Belem. Vessels may contact the pilot station for information concerning traffic movements

Regulations

A Unit to Identify and Observe Traffic in the Port of Lisbon (UIOTPL) has been formed to identify and observe all maritime traffic, with the exception of naval vessels, in the port between Entres-Torres and Ponte Vasco de Gama. The UIOTPL is in operation 24 hours. It is applicable to all vessels, whether under pilotage or not, and must be contacted by a vessel prior to entering, mooring, anchoring, departing, or moving internally within the observation area. The UIOTPL can be contact via Lisbon Port Control on VHF channels 61 and 64.

Vessels should not exceed a speed of 10 knots when E of Torre de Belem and, when not under the control of a pilot and within 300m of any shore, they should not exceed a speed of 5 knots.

All vessels must not exceed a speed of 5 knots when in the vicinity of Lisnave Shipyard.

Vessels entering the port through Barra Norte must give way to vessels leaving through Barra Grande and must stay NW of

the alignment of Caxias Beacon and Mama Beacon, until it is clear to proceed upriver.

Vessels leaving by Barra Grande should adhere carefully to the alignment of the Gibalta range and the Esteiro range and must not get NW of the beacon alignment.

The area in the vicinity of the junction of the entrance fairways has been designated a Precautionary Area.

Anchorage

There are designated anchorage areas for merchant vessels in Baia de Cascais.

Merchant vessels with drafts up to 5m should anchor in an area centered 1 mile E of Ponta do Salmodo. Larger vessels, with drafts of more than 5m, should anchor in an area centered 1.5 miles S of the same point. The limits of both areas can best be seen on the chart.

Anchorage in the port is divided into two main designated zones, W and E, which are situated W and E, respectively, of the prohibited anchorage area lying SE of Torre de Belem.

The W zone is subdivided into three areas (W1, W2 North, and W2 South) while the E zone is subdivided into seven areas (E1 through E7); the limits are all best seen on the chart. The bottom is mud and sand with good holding ground, but the tidal currents are strong.

In addition, three anchorage berths designated 3.1, 3.2, and 3.3 are situated, in a depth of 33m, SSW of Torre de Belem and are designated for deep-draft vessels.

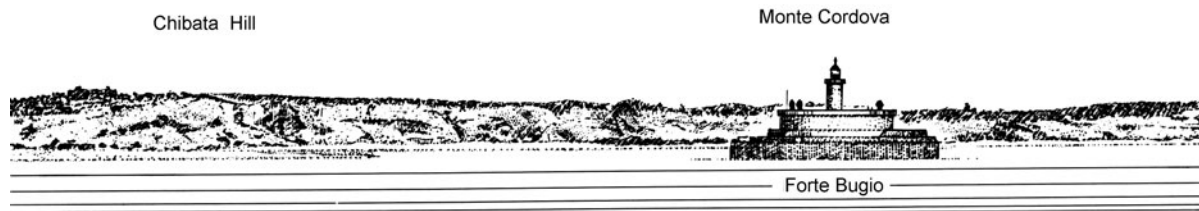
A strong ebb current and a W wind may cause vessels to range considerably with the possibility of dragging. Large vessels are usually not subject to drag if anchored near the S shore.

Caution

Several prohibited anchorage areas, the limits of which may be seen on the chart, are situated within the port.

Several ferries cross the river at points indicated on the chart.

A vessel passing through Barra Norte and entering the main current running through Barra Grande may have its bow deflected as much as 45° off course unless compensated for by immediate rudder action. When inbound, this is not important because the narrows would have already been cleared, but when outbound, unless prompt and positive action is taken, a vessel could run into danger.



Forte Bugio in range with Monte Cordova bearing 115°

Numerous fishing vessels may be encountered in the approaches of the port. At night, in good weather, fishing boats anchor seaward of the bar and show lights only on the near approach of another vessel, so that numerous lights may suddenly be seen in this vicinity.

Several outfall pipelines extend into the river and may be seen on the chart.

Several wrecks lie in the channel in the vicinity of the E and W approaches to the bridge and may best be seen on the chart.

A shoal, with a least depth of 8.5m, lies on the S side of the channel, about 1.2 miles upstream of the bridge.

Several submarine cables lie within the vicinity of the port and may best be seen on the chart.

Strong E winds raise the heaviest seas within the port.

Submarines frequently exercise in the vicinity of the approaches to the port.

Lisboa to Porto de Setubal

5.57 The bight of the coast lying between Cabo Espichel and Cabo de Sines, 31 miles SE, is backed on its N side by **Serra da Arribida** (38°30'N., 9°00'W.), a high mountain range. This range extends ENE and Formosinho, its highest peak, rises to a height of 502m about 11 miles ENE of Cabo Espichel. Monte Cordova is the principal summit of Serra de Sao Luis, a NE extension of Serra da Arribida. Its rounded summit rises to a height of 394m, 4.5 miles NE of Formosinho. Monte Palmela, 269m high, stands 2.8 miles NE of Monte Cordova. A prominent town and a castle are situated on its summit.

Enseada de Sesimbra (38°26'N., 9°06'W.), a small bay, lies 5.5 miles ENE of Cabo Espichel. A resort town stands at the head of the bay and is fronted by a harbor which is protected by a breakwater. A conspicuous castle stands on a hill above the town, and a prominent radio mast stands 0.6 mile NE of it. The harbor has depths of 2 to 5m and is used by fishing vessels and pleasure craft. Anchorage can be taken, in depths of 14 to 17m, off the harbor.

Caution.—Several submarine cables, which may best be seen on the chart, extend seaward from a point lying on the NE side of Enseada de Sesimbra.

Care should be taken to avoid the fishing nets and traps laid off this section of coast.

A measured distance (1 mile) lies off the coast in the vicinity of Enseada de Sesimbra. It is indicated by several beacons and may best be seen on the chart.

Porto de Setubal (38°31'N., 8°53'W.)

World Port Index No. 38000

5.58 Porto de Setubal, an important commercial port and fishing center, is situated on the N bank of the Rio Sado, close within the entrance. The Rio Sado, which flows into the lagoon forming Porto Setubal, has its origin in the hills of Sao

Martinho, 70 miles inland. It is navigable by small craft as far as Alcacer do Sals, 27 miles above the bar.

Port of Setubal Home Page

<http://www.portodesetubal.com>

Tides—Currents.—Tides rise 3.4m at springs and 2.7m at neaps.

The tidal currents mostly follow the direction of the channels and the ebb current may attain a rate of 3 knots at springs.

Depths—Limitations.—The entrance channel has a least charted depth on the bar of 8.9m, although it has been reported (1995) that the channel has been dredged to 12m.

The main facilities include the following:

1. Cais Novo da Secil, a cement factory quay, is 105m long, with a depth of 9.6m alongside.

2. Cais das Fontainhas, a general cargo and container quay with a ro-ro ramp, is 525m long and has depths of 8.6 to 9.6m alongside.

3. Cais das Pirites Alentejanas, a power station quay, is 125m long, with a depth of 8m alongside.

4. Cais da Sapec, a fertilizer factory quay, is 112m long, with a depth of 8.3m alongside.

5. Cais da Socel, a paper and pulp quay, is 60m long, with a depth of 4m alongside.

6. Cais da Boliden, a gas-freeing berth, is 260m long, with a depth of 8.5m alongside.

7. Cais da Eurominas, an ore quay, is 154m long, with a depth of 8m alongside.

8. Cais Navais de Troia fronts a naval installation which is situated on the S side of the river, 2 miles SE of Ponta Adoxe. This quay is 230m long and has a depth of 12m alongside.

9. The Lisnave Shipyard complex, formerly the Setenave Shipyard complex, is situated close W of Cais da Eurominas and includes a drydock, 450m long and 75m wide. Vessels up to 700,000 dwt can be handled. It is reported (1994) that this building and repair complex is to be expanded.

In addition, there are a number of small basins situated along the N bank with depths of 2 to 4m. These are used by fishing vessels, coasters, car ferries, yachts, small craft, and hovercraft.

Generally, vessels are not limited by length or beam, but are limited by the bar to a draft of 9.6m.

Aspect.—The port is entered between Forte do Outao, 8.5 miles ENE of Sesimbra, and Ponta Adoxe, 1.3 miles E. A light is shown from a tower, 11m high, standing on Forte do Outao.

Ponta Adoxe is the NW extremity of the Peninsula de Troia, a long and narrow sandy spit which separates the estuary of the Rio Sado from the ocean. Its seaward side is known as Costa da Gale. A number of conspicuous high-rise buildings stand on this spit.

The river entrance is fronted by a shifting sand bar. An entrance channel, 3 miles long, leads from the bar into the port and is bordered by extensive shoals. Inside these shoals, the river widens and the depths increase. A large part of the river is occupied by an extensive middle ground composed of mud and

sand which dries in places. The commercial port is situated along the N bank of the river.

The entrance channel is indicated by a lighted range and the fairway is marked by beacons and lighted buoys. The outer lighted beacon, situated on the NW side of the entrance channel, is equipped with a racon.

Conspicuous landmarks include a church and a convent standing 0.4 mile inland, 2.8 miles WSW of Forte do Outao; the Secil cement factory standing on the NW side of the river, 0.3 mile N of Forte do Outao; a chimney standing 0.5 mile N of the factory; and several radio masts standing, at an elevation of 286m, 1.3 miles W of Forte do Outao.

Prominent landmarks include Forte de Albarquel, from which a light is shown, standing on a point, 1.6 miles NE of Forte do Outao; Castelo Sao Felipe, standing on a reddish-colored hill, 0.5 NE of Forte de Albarquel; a water tank, standing 2.2 miles NE of Ponta Adoxe; two chimneys, standing at a power station, 3 miles ENE of Ponta Adoxe; and a fertilizer factory, standing 0.8 mile SE of the power station.

Pilotage.—Pilotage is compulsory for all vessels except fishing vessels and yachts.

Vessels should send an ETA at least 6 hours in advance and a confirmation 2 hours before arrival. Pilots can be contacted on VHF channels 14 and 16 and generally board about 1 mile seaward of the bar.

During bad weather from the SW, vessels should request information on the state of the bar and any pilotage restrictions.

Regulations.—The maximum speed allowed when crossing the bar or navigating within the port is 10 knots.

Anchorage.—An anchorage area, the limits of which are shown on the chart, lies E of Forte de Albarquel and is designated for commercial and military vessels.

Caution.—A submarine cable lies between Ponta Adoxe and Forte de Albarquel. Anchoring is prohibited in the vicinity of the cable.

At night, care should be taken not to confuse the front entrance range light with an advertising sign which stands close NW of the alignment.

A dangerous wreck lies in an approximate position about 5.5 miles ESE of the entrance bar.

The entrance bar is composed of fine sand and is subject to silting. The local authorities should be contacted for the latest information.

Porto de Setubal to Cabo de Sao Vicente

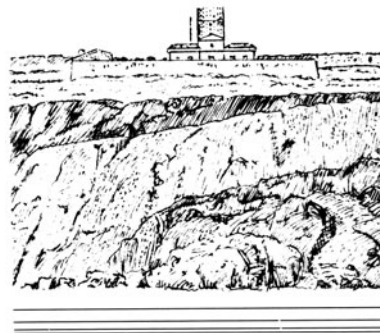
5.59 The coast between Ponta Adoxe and Cabo de Sines, 32 miles S, is generally low in the N part and fringed by a sandy beach with a few dunes. In the S part, within 14 miles of the cape and 6 miles inland, the land rises to Serra da Grandola, a range of hills standing parallel to the coast. The town and castle of Santiago de Cacem stand on the most prominent of these hills, 9.5 miles ENE of the cape. A light is shown from Pinheiro da Cruz, 16.5 miles S of Ponta Adoxe.

Caution.—Care should be taken to avoid the fishing nets which are laid off the shores as far as 15 miles S of the entrance to Setubal.

A submarine cable extends 1.3 miles seaward from a point on the shore, about 1.5 miles N of Cabo de Sines. Navigation is prohibited in its vicinity.

Cabo de Sines (37°57'N., 8°53'W.) is a salient and steep but relatively low point. A main light is shown from a prominent tower with a dwelling, 22m high, standing on the cape.

Perceveira d'Aguião and Perceveira are prominent islets lying 0.3 mile NW and 0.4 mile SW, respectively, of the cape.



Cabo de Sines Light

Conspicuous chimneys stand 3 miles NE, 3.8 miles E, and 4 miles SE of the light. The cape can also be easily identified by the conspicuous flares and storage tanks of the refinery and petrochemical complex situated at Porto de Sines.

The coast between Cabo de Sines, and Ilheu do Pessegueiro, 8.5 miles SSE, consists of an open bay, facing SW. The Rio Junqueiro flows into this bay, 4.5 miles SE of the cape.

5.60 Porto de Sines (37°57'N., 8°52'W.) (World Port Index No. 38005) is partially sheltered by Cape Sines and extends up to 2 miles S of it. It is a major deep-water port serving an extensive industrial complex.

Port of Sines Home Page

<http://www.portodesines.com>

Tides—Currents.—Tides rise 3.4m at springs and 2.6m at neaps.

Depths—Limitations.—The W breakwater extends 1,700m S from the S side of Cabo de Sines. The E breakwater extends 800m W and 1,100m NW from a point on the shore 2 miles SE of the root of the W breakwater.

The oil and petrochemical terminal is situated close E of the W breakwater, which has three berths on its inner side. The S part of this breakwater, including the outer oil berth, was destroyed by storms in 1979 and is reduced in size.

A coal terminal is situated close inside the E breakwater and several small basins, situated between the terminals, are used by small craft, fishing vessels, and pleasure craft.

The private Multipurpose Terminal has one wharf, which is 645m long and can accommodate vessels up to 150,000 dwt, with a maximum length of 295m and a maximum draft of 18m.



Sines



Sines



Sines—Oil and Petrochemical Terminal

Another wharf, which is 205m long, can accommodate vessels up to 250m long with a maximum draft of 15m.

Sines—Berth Information			
Berth	Maximum vessel		
	LOA	Draft	Size
Petroleum Terminal			
No. 2	240 to 350m	22.5m	100,000 to 350,000 dwt
No. 3	135 to 280m	17m	10,000 to 150,000 dwt
Refinery Terminal			
No. 4	135 to 290m	18m	10,000 to 150,000 dwt
No. 5	120 to 282m	17m	10,000 to 100,000 dwt
LPG Terminal			
No. 6	70 to 106m	10m	
No. 7	70 to 106m	10m	
Petrochemical Terminal			
No. 9	78 to 160m	10m	1,000 to 3,000 dwt
No. 10	78 to 172m	11m	3,000 to 20,000 dwt
Coal Terminal			
Outer Wharf	190 to 250m	14m	30,000 to 50,000 dwt
Inner Wharf	up to 300m	19m	up to 150,000 dwt
General Cargo Terminal			
N Berth	up to 125m	5.5m	
S Berth	up to 100m	6m	

Pilotage.—Pilotage is compulsory. The pilot boards within a 3-mile radius of the head of the W breakwater, depending on the weather and the size of the vessel. Vessels should send an ETA at least 24 hours in advance and confirm their arrival at least 2 hours in advance.

It is reported (1993) that traffic lanes have been established in the approaches. These lanes lie parallel to centerlines which radiate on bearings of 171°, 253°, and 311° from the head of the W breakwater and extend up to 10 miles from the port.

Regulations.—Vessels carrying dangerous cargo should contact the port when within 12 miles of the entrance.

Fishing vessels, small craft, and pleasure craft must not impede the movement of large vessels.

Anchorage.—Three designated anchorage areas have been established in the following positions from the head of the E breakwater:

1. About 0.3 mile W, for vessels up to 20,000 dwt.
2. About 0.8 mile SSW, for vessels between 20,000 and 150,000 dwt.
3. About 1.8 miles S, for vessels over 150,000 dwt.

Caution.—Wave recorder (ODAS) lighted buoys may be encountered in the vicinity of the approaches to the port.

Deep-draft vessels should keep at least 1.5 miles from the coast when approaching the port from the N and 2 miles when approaching from the S.

Submarines frequently exercise within the waters off the coast in the vicinity of the port.

5.61 Ilheu do Pessegueiro (37°50'N., 8°48'W.), 21m high, is a dark, rocky islet on which stands the ruins of a fort. A channel, 300m wide, separates this islet from the mainland and is foul in its N part. Porto Covo, a village, stands on the N side of a small inlet which is entered close NE of the islet. There is a landing place for fishing boats on a beach at the head of this inlet. A conspicuous water tower stands 0.5 mile E of the inlet.

Porto de Vila Nova de Milfontes (37°43'N., 8°47'W.), a small town, is situated at the entrance of the Rio Mira which

flows into the sea 6.7 miles S of Ilheu do Pessegueiro. A light is shown from a turret on a dwelling, 5m high, standing on the N entrance point of the river. A prominent bridge spans the river, 1 mile E of the entrance. The river mouth is narrow and is obstructed by a shifting bar which frequently has a least depth of less than 1m. The river is navigable by shallow draft vessels as far as Vila de Odemira, 12 miles above the entrance.

Baixa do Cavalo, a shoal with a least depth of 6.5m, lies 1 mile NW of the N entrance point. Vessels with local knowledge may anchor, in a depth of 13m, outside of the bar.

Cabo Sardao (37°36'N., 8°49'W.), a high and steep promontory fringed by rocks, is located 7.5 miles S of the Rio Mira. A main light is shown from a prominent tower with a dwelling, 17m high, standing on the cape. The village of Barcas stands in an inlet, with a landing place for fishing boats, 2.7 miles S of the cape.



Cabo Sardao Light

Ponta da Atalaia (37°19'N., 8°52'W.), located 17 miles SSW of Cabo Sardao, consists of high, vertical cliffs which project NW from the coast. Pedra da Atalaia, a prominent rock, stands 0.4 mile W of this point. It is almost as high as the cliffs and can be identified from the N or S by its triangular shape.

Ponta da Arrifana, marked by a fort, is located 1.8 miles S of Ponta da Atalaia and is fronted by several rocks extending 0.3 mile seaward. Pedra da Agulha, a high rock surrounded by smaller rocks, lies 1.2 miles S of this point; from a distance Pedra da Agulha appears like a vessel under sail.

Serra de Monchique is located E of Ponta da Atalaia and has two distinct peaks. Foia, the W peak, stands 13.5 miles E of the point, and Picota, the E peak, stands 3 miles farther E. Both of these peaks consist of bare rock which reflects the sunlight and appears whitish in color, especially when viewed from the N.

5.62 Pontal (37°12'N., 8°55'W.), located 7.8 miles S of Ponta da Atalaia, is a rocky and reddish point. It is prominent, being higher than the coast in the vicinity. A fort stands on the point, and a village is situated 1.2 miles SE of it.

Pedra da Gale, an above-water rock, lies about 0.8 mile SW of Pontal at the extremity of a rocky bank.

A prominent building stands near the coast, 2.5 miles S of Pontal; Torre da Aspa, a conspicuous white monument 10m high, stands on a hill, 5 miles SSW of it.

Ponta do Telheiro (37°03'N., 8°59'W.), a promontory of bright red cliffs, is located 9.3 miles SSW of Pontal. The coast between is fronted by numerous above-water rocks and vessels should stay at least 1 mile from it.

Cabo de Sao Vicente (37°01'N., 9°00'W.), located 1.8 miles SSW of Ponta do Telheiro, is described in paragraph 6.2.